

DEPARTMENT OF EDUCATION
THE PROVINCE OF KWAZULU-NATAL

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR CONSTRUCTION
OF
PRIMARY AND JUNIOR SECONDARY SCHOOLS
IN
KWAZULU-NATAL PROVINCE
IN
THE REPUBLIC OF SOUTH AFRICA**

August 2001

**JAPAN INTERNATIONAL COOPRATION AGENCY
FUKUNAGA ARCHITECTS-ENGINEERS
MOHRI, ARCHITECT & ASSOCIATES, INC.**

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PREFACE

In response to a request from the Government of the Republic of South Africa, the Government of Japan decided to conduct a basic design study on the Project for Construction of Primary and Junior Secondary Schools in KwaZulu-Natal Province in the Republic of South Africa and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to South Africa a study team from February 12, 2001 to March 20, 2001.

The team held discussions with the officials concerned of the Government of South Africa and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to South Africa in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of South Africa for their close cooperation extended to the team.

August, 2001



Kunihiko Saito
President

Japan International Cooperation Agency

August, 2001

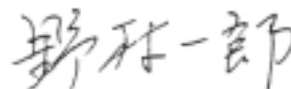
LETTER OF TRANSMITTAL

We are pleased to submit to you the basic design study report on the Project for Construction of Primary and Junior Secondary Schools in KwaZulu-Natal Province in the Republic of South Africa.

This study was conducted by Fukunaga Architects-Engineers and Mohri, Architect and Associates, Inc., under a contract to JICA, during the period from January, 2001 to August, 2001. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of South Africa and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

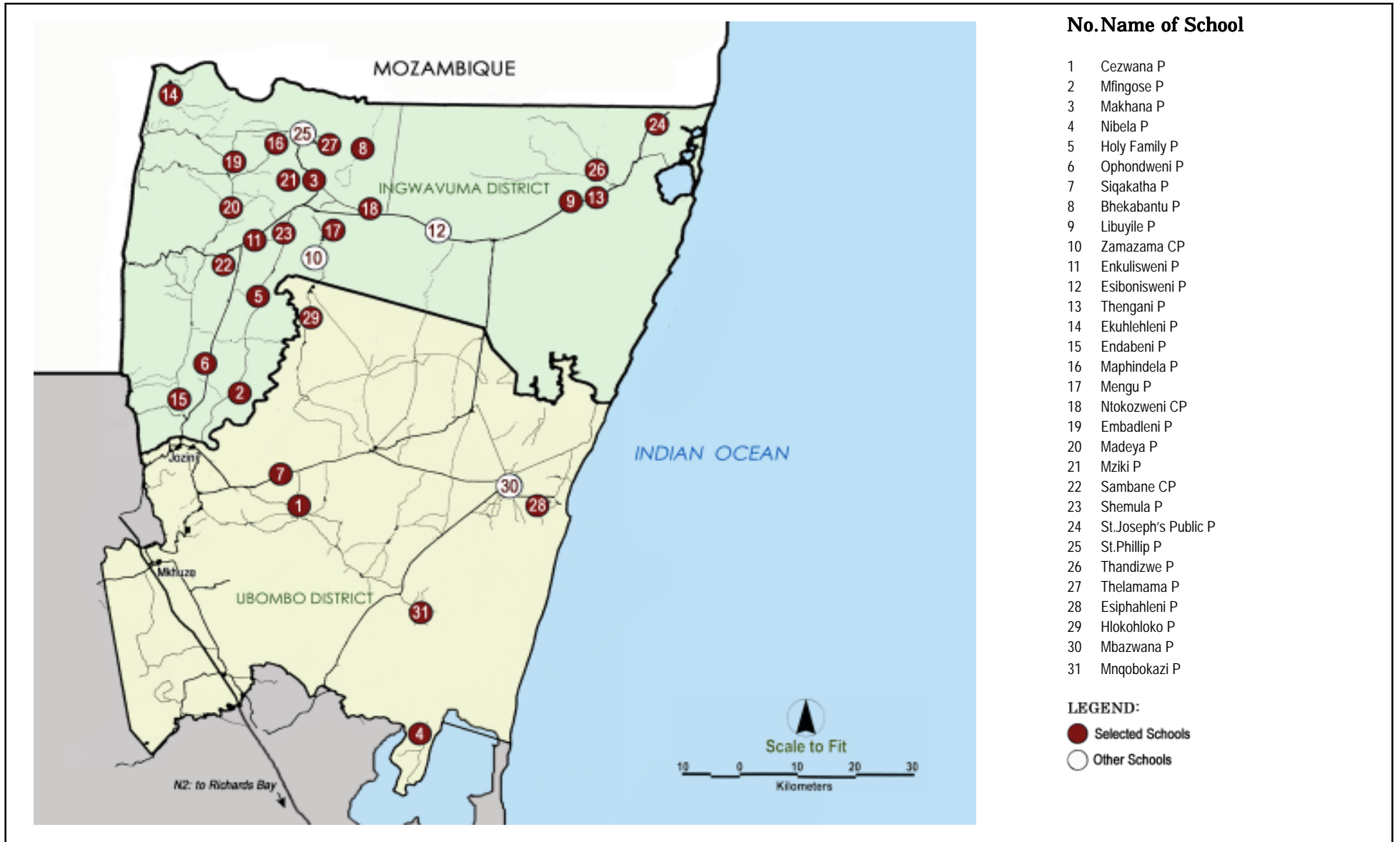
Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



Ichiro Nomura
Project Manager,
Basic design study team on
the Project for Construction of
Primary and Junior Secondary School
in KwaZulu-Natal Province
in the Republic of South Africa
the joint Venture between
Fukunaga Architects-Engineers and
Mohri, Architect & Associates, Inc.





SITE MAP



Perspective View of Typical School (Type 4 + Type 4A)

ABBREVIATIONS

A/P	: Authorization to Pay
B/A	: Banking Arrangement
KZNDEC	: Province of KwaZulu-Natal, Department of Education and Culture
DoW	: Department of Public Works
E/N	: Exchange of Notes
RDP	: Reconstruction and Development Programme
R	: Rand
S.A.	: South Africa
US\$: U.S. Dollar

Table of Contents

Preface		
Letter of Transmittal		
Maps & Perspective Drawing		
Abbreviations		Page
Chapter 1	Background of the Project	1
Chapter 2	Contents of the Project	3
	2-1 Objectives of the Project	3
	2-2 Basic Concept of the Project	3
	2-2-1 Study on the concept of the Request	3
	2-2-2 Basic Concept of the Project	5
	2-3 Basic Design	15
	2-3-1 Design Concept	15
	2-3-2 Basic Design	16
	2-4 Implementing Organization of the Project	35
	2-4-1 Organization	35
	2-4-2 Budget	35
	2-4-3 Personnel Required and Technical Level	35
Chapter 3	Implementation Plan	36
	3-1 Implementation Plan	36
	3-1-1 Implementation Concept	36
	3-1-2 Implementation Conditions	38
	3-1-3 Scope of Works	40
	3-1-4 Consultant Supervision	40
	3-1-5 Procurement Plan	43
	3-1-6 Implementation Schedule	44
	3-1-7 Obligations of Recipient Country	45
	3-2 Project Cost Estimation	47
	3-2-1 Project Cost Estimation	47
	3-2-2 Operation and Maintenance Cost	47
Chapter 4	Project Evaluation and Recommendation	49
	4-1 Project Effect	49
	4-2 Recommendation	52
Appendices		
	1. Member List of the Survey Team	
	2. Survey Schedule	
	3. List of Party Concerned in the Recipient Country	
	4. List of Reference Materials	
	5. Minutes of Discussion	
Attachment		
	· Information Tables	
	· Contents of Village Meeting	
	· Site Pictures	
	· Plot Plan (Selected Schools)	
	· Plot Plan (Other Schools)	

CHAPTER 1

BACKGROUND OF THE PROJECT

CHAPTER 1 BACKGROUND OF THE PROJECT

In the republic of South Africa (herein after referred to as South Africa) the Reconstruction and Development Programme (RDP) was formulated in 1994 after the inauguration of the Mandela administration. Based on a philosophy of reconciliation and coordination among the races, the RDP focuses its programmes and projects on two major areas, building a unified democratic nation free of racial inequalities by eradicating the legacy of Apartheid, and revitalizing the economy suffered from the international economic sanction in the previous Apartheid years.

	Unemployment Ratio %	Primary Ed. Compl. Ratio %	HDI 1994	Income (hour:R) 1997									
				Agri.	Mine.	Manuf.	Elec.	Const.	Comm.	Transe.	Finance	Service	Region
Black	36.9	75.7	0.5	3.2	8.5	8.8	11	7.1	7	8.7	9.7	14.5	4
White	5.5	98.8	0.897	17.4	26.5	29.9	27.5	24.6	22.3	27.7	28.6	26.4	-
Remarks	HDI Human Development Index HDI: Draft White Paper on Population Policy, and CENSUS IN BRIEF			1R = 0.137 US \$ Mean and Minimum Wages in SA Statistics SA									

The GNP per capita of South Africa is US\$3,160 (1999, World Bank). While this is not too low compared to the global standards, the inequalities in the social capital and income between the areas with modern developed economy and those agricultural areas mostly with the previous homelands for the African natives still remain unsolved-as shown in the table below. In consequence these disparities are fueling many social problems now facing South Africa, including the rapid escalations of crime.

One of the most important key issues based on the RDP is to develop human resources by eradicating educational disparities among the races, by improving the literacy rate, constructing an efficient education system, and reeducating the adults who were not given educational opportunities during the Apartheid years.

White Paper on Education and Training issued in 1995 outlines the specific content of programmes, related to education and training policies, such as policies for innovation of educational administration, curriculum development, educational finance and school management, higher education, scholarship schemes, science/mathematics education, early childhood education, basic education/training for adults, teacher education, etc. In 1996, based on the White Paper, the government passed the South Africa School Act. The act stipulates the ages and years of compulsory education, as well as the provisions for establishment and management of public schools.

The five-year implementation program (TRISANO) launched in 2000 introduced five action

plans in the areas of (1) HIV/AIDS education, (2.) improvement of school efficiency and acquisition of specialties by teachers, (3.) literacy education, (4). continuous education and higher education, and (5.) improvement of administrative efficiency of national and provincial education departments. Among the five action plans, as related to (2), the improvement of school facilities is becoming the most important task for the government.

KwaZulu-Natal Province, the province covered under this project, includes the former KwaZulu autonomous region (Homeland) and is mostly populated by black Africans (81.7%). The level of educational facilities in the province is low, such that as many as 14.5% of the schools are renting classrooms from other facilities such as churches, and 19.8% of the schools are dilapidated. Schools with a shortage of classrooms count as many as 14,000, placing KwaZulu-Natal just behind Eastern Cape Province in terms of the scale of classroom shortages. In Ingwavuma and Ubombo, the target districts of the project, there are currently 228 primary and junior secondary schools, with about 100,000 pupils studying in 1,986 classrooms - being short of about 617 classrooms which is estimated somehow to accommodate 25,000 pupils.

To cope with this situation, the educational expenditure occupies the largest portion in the whole provincial government budget, however, of which about 90% of the budget is being spent for personnel related expenses. Given the scarcity of its own financial resources, it appears extremely difficult for KZNDEC to proceed with its own program for building new classrooms.

With the background described above, the government of South Africa and government of KwaZulu-Natal Province requested to the Japanese Government a grant aid cooperation in 2000 for building classroom facilities in Ingwavuma and Ubombo District.

CHAPTER 2

CONTENTS OF THE PROJECT

CHAPTER 2 CONTENTS OF PROJECT

2-1 Objectives of the Project

The population of Kwazulu-Natal Province is approximately 8.4 million, equal to 21% of the total of South Africa, and of the total 57% is living in non-urban area most of which belong to the previous home land for African natives and socially, economically underdeveloped with poor educational environment. The project aims at upgrading educational environment and, in consequence, relieving the disparities between the races in the areas by providing basic infrastructure, such as classrooms, teacher's rooms, principal's rooms and stores, toilets and water tanks, at Primary (grade 1~6), and Junior Secondary (grade 1~9) schools in Ubombo and Ingwavuma District in Ulundi Region, the most underdeveloped of the 8 regions in KwaZulu-Natal Province, where this is lacking due to its remoteness from the economic center of the province.

2-2 Basic Concept of the Project

2-2-1 Study on the content of the Request

(1) The Project Requested Area

KwaZulu-Natal Province consists of 8 regions: Durban South, Empangeni, Ladysmith, North Durban, Pietermaritzburg, Port Shepstone, Ulundi, Vryheid. The Province was formed in 1994 when Natal Province and the previous Zulu autonomous government were consolidated. About 80% of the population is African natives, and the legacy of Apartheid era, inequalities in educational environment between the races still remains markedly in the area, particularly, notable in the lagging development of educational infrastructure.

The statistics, issued by the Provincial Department of Education in 1999, shows that approximately 2,730,000 pupils are currently enrolled in some 5,900 primary and secondary schools (1999) and the shortage of classrooms counts approximately 14,500. With this situation in the back ground, and given the fact that more than 90% of the educational budget being spent for personnel related expenses (although educational expenditure being one of the major items in the Provincial budget), it is extremely difficult for the government to allocate fund for improvement of school facilities.

As for Ulundi Region (Ubombo and Ingwavuma District), mentioned in the request as the target area in this project, where needs for school facilities are especially high, no international aid has been so far provided in this relation. In addition, whereas improvement of school environment is expected the most by parents and those concerned, very little progress has been made for upgrading of school facilities due to the lack of fund in the

government. Hence, the provision of Japanese Grand Aid Cooperation to these districts is judged reasonable.

(2) Requested Schools

The government of Kwazulu-Natal Province, in its request to the Japanese government (May 2000), listed primary and secondary schools, 138 and 177 schools respectively, in Ubombo and Ingwavuma District, as the target schools. However, subsequent to the request (received by the survey team just before its departure from Japan Feb. 2001), a list of 40 schools were newly presented to the survey team by KZNDEC who, on the basis of the result of Annual Survey 1999, selected the schools, prioritizing the schools in the order of scale of classroom shortages (from the large to small).

However, in consideration that the project (aim of the Japanese grant aid project) is focused at compulsory education (primary and junior secondary schools), 9 schools of the 40 schools, which are high schools or combined schools, were excluded from the survey list and the remaining 31 schools to be the object schools for survey with the agreement by both parties.

Table 2-1: Target Schools

No.	School of Name	D istrict
1	Cezwana P	Ubombo
2	Mfingose P	Ingwavuma
3	Makhana P	Ingwavuma
4	Nbela P	Ubombo
5	Holy Family P	Ingwavuma
6	Ophondweni P	Ingwavuma
7	Siqakatha P	Ubombo
8	Bhekabantu P	Ingwavuma
9	Lbuyile P	Ingwavuma
10	Zamazama CP	Ingwavuma
11	Enkulweni CP	Ingwavuma
12	Esbonweni P	Ingwavuma
13	Thengani P	Ingwavuma
14	Ekuhleleni P	Ingwavuma
15	Endabeni P	Ingwavuma
16	Maphindeba P	Ingwavuma
17	Mengu P	Ingwavuma
18	Ntokozeni CP	Ingwavuma
19	Embadeni P	Ingwavuma
20	Madeya P	Ingwavuma
21	Mziki P	Ingwavuma
22	Sambane CP	Ingwavuma
23	Shemula P	Ingwavuma
24	St. Joseph Public P	Ingwavuma
25	St. Philip P	Ingwavuma
26	Thandizwe P	Ingwavuma
27	Thelamama P	Ingwavuma
28	Esphahleni P	Ubombo
29	Hbokobko P	Ubombo
30	Mbazwana P	Ubombo
31	Mngobokazi P	Ubombo

(3) Requested component

The components of the project agreed upon are as follows.

School buildings including furniture

- Classrooms, Staff room / Store (if necessary), Furniture (Desks & Chairs: for pupil and teacher, Cabinets, Blackboards)
- Toilets
- Rainwater tanks

2-2-2 Basic Concept of the Project

(1) Present Condition of Target Area

1) Target area

Ulundi Region of the KwaZulu-Natal Province, the target region of the project, consists of 6 districts. In the region, about 920 primary and junior secondary schools exist with approximately 390,000 pupils. Among the districts in the region, Ubombo and Ingwavuma District are the target area of the project. In these two districts there are 228 primary schools with about 100,000 pupils. The shortage of classrooms in these two districts counts about 617.

(2) Target schools

As described in the preceding clause, the total of 31 schools, 7 from Ubombo and 24 from Ingwavuma District, are selected as the target schools for survey.

1) Condition of the existing schools

The 31 target schools are dispersed within the area stretching 100Km from North to South and 70Km from East to West, with its northern edge bordering with Mozambique, the west partly adjoining Swaziland, and the east facing the Indian Ocean.

30 schools among 31 schools consist of grade 1 through 7, and the remaining one school consists of grade 1 through 9. Furthermore, most of the schools are provided with pre-primary classes (GR). The number of pupils varies in grades normally with more pupils in the lower grades than in the upper grades. However, looking at the trend of pupils' enrollment during the period from 1998 to 2001, the pupils' number in G1-G3 slightly decreases and the number in G4-G9 slightly increases.

The most of the school buildings are built of concrete blocks, but broken walls and

windows are seen at some of the schools showing inadequate maintenance condition. The sizes of classrooms are generally the same (50m²) at all the schools. At some of the schools classrooms are seen used for some other purposes, such for principal's rooms or stores. Very few schools have staff rooms, stores, and toilets. Most of the schools (24 of 31) are provided with fence of a various types, some merely enclosing buildings and others surrounding the entire sites. The school sites are generally spacious and at some of the schools football poles were observed.

2) Access road

The main roads are generally wide and asphalt paved. The most of the local roads from the main roads to the target sites are not paved, but there was seen no problem existing with access of vehicles to the sites. The target schools in the target districts are scattering widely in the low land and hilly land, part of the low land facing the ocean.

3) Maintenance (cooperation of communities) condition

Each target school has a School Governing Body (SGB), consisting of teachers, students, parents, and representatives of the community. And SGB is usually undertaking daily maintenance of school facilities. Maintenance expense is generally paid out of tuition and funds collected from parents and communities supporting the school. Amount of funds and collecting method are diverse according to the situation surrounding the schools, but usually the money is collected under the name of School Fund, Building Fund or Sport Fund.

4) Pupils' enrollment

There is no school district or limit of commuting time stipulated by KZNDEC, therefore, pupils are in principle free to go to any public school. Pupils in the lower grades generally go to the schools in the communities to which they belong. On the other hand, those in the upper grades tend to go to the schools with better environments. The average pupil population of each of the target schools is in the range of between 400~1,400, varying in the number between the schools.

5) Community Meeting

Community meetings were carried out at 10 schools, selected from among the 31 target schools. Main purpose of the meeting is to understand the issues on educators, pupils, and parents, and also to be acquainted with the social-education environments surrounding the target schools.

An average of 20 people, including members of School Governing Body (SGB),

principals, parents, educators, etc. participated in each meeting.

The results of meetings are as follows: (Refer to ATTACHMENT)

- Parents are expecting better educational environment for children, so that they are willing to help building and cleaning of school facilities. Also improvement on overcrowded classes and shortage of toilet facilities is expected.
- Most school facilities are being utilized for community activities (such as cultural, sports, and adult literacy education).
- Agriculture is the main occupation in the periphery of target areas. However, due to lack of employment opportunities in the area. People tend to leave the area for urban area (Johannesburg, Durban) or for mines (Kimberly) to find job; as a result some of them die by accidents.
- Almost every year, houses, livestock, and people receive damages by natural disaster such as flood and tornado.
- Overlapping of application to other donors. None of the 31 target schools is making application to other donors for school construction.

(2) Selection of Project Target Schools

All of the 31 schools selected as the survey objects are primary and junior secondary schools currently existing.

Criteria for selecting project target schools from the 31 schools are as follows.

Table 2-2: Criteria for selection of target schools

No	Judgement
1	Sites for which ownership or right of using the site is secured: The schools that submitted PTO (Permission To Occupy) during the site survey period.
2	Sites with condition suitable for construction of school buildings: The grounds with high water level (damp ground) or with inadequate bearing strength are excluded.
3	Sites accessible by vehicles
4	Sites with a shortage of at least 3 classrooms: In view of efficiency of construction at least 3 classrooms (one minimum building unit) must be constructed per one

(3) Projection of Number of Classrooms

1) Understanding of Present Condition

Since no educational district in the target area is provided, pupils are in principle free to choose their schools. As the academic year goes up, pupils tend to transfer to other schools with better environments. This is thus creating irregular increases and decreases in the movement of pupils' number at each school unit.

In KwaZulu-Natal Province primary schools are currently formed of 7 grades (G1-G7) and secondary school of 2 grades (G8-G9). Among the target schools, the school with 9 grades (G1-G9) is only "Mfingose Primary School".

Currently KZNDEC is introducing "Curriculum 2005" in the province, starting with training of teachers for G1 in 1998, for G2 in 1999, for G3 and G7 in 2000. Also the training is scheduled to continue for teachers for G4 and G8 in 2001, for G5 and G9 in 2002, for G6 and G10 in 2004, for G12 in 2005. According to the standards of KZNDEC, the number of pupils per classroom (according to KZNDEC) is 40 and the floor area of a classroom is 50sqm. In the planning of the project these standards will be adopted.

As a result of the site survey, while the number of pupils per grade exceeds 40 at most of the schools, there are two schools with the number of pupils per grade being less than 40; 36 pupils at G7 of St.Joseph's Primary School and 29 at G7 of Hlokohekoko Primary School. Either of these classes is counted as one class in the calculation of classrooms.

In the case that additional teachers are required along with the increase of classrooms in the project, KZNDEC will fill the shortage as required. According to KZNDEC, there exists no problem in allocating teachers, because teachers (all with qualification) abound in the province especially in urban area; KZNDEC is currently planning to relocate these teachers. And also in the province, graduates with degree in education were counted 1,088 in 1995, 1,228 in 1996, 1,302 in 1998. ("South African Graduate Statistics 1999" by Human Resource Council).

2) Pupil Population Forecast

Because no school district is set in the target area and, therefore, pupils are free to transfer to other schools, it is hard to forecast the future pupil population.

Looking at the number of pupils at each grade the number in the lower grades is generally larger than those in the upper grades. According to the data during the period from 1998 to 2001 the number of pupils in the lower grades (G1-G3) slightly decreases and the number in the upper grades (G4-G7) slightly increases. This phenomenon indicates the influence of the policies taken by both national and provincial government during the period. First, in 1996 South African School Act was enacted and according to the regulation concerning

enrollment age stipulated in the Act, KZNDEC regulated the primary school enrollment age to 7 years old. Secondly, with the guidance and promotion led by the government, opportunities for school education have been further created and the quality of education improved, having enabled pupils proceed with higher education. Although the number of pupils at each target school shows irregular increase or decrease, the total number of pupils at the 31 schools is maintained approximately at 26,000 during the past 4 years.

In the event that the project is implemented and the school environment improved, the number of pupils is assumed to increase slightly from the number at the time of the survey (March 2001). This is because pupils tend to transfer to better-equipped schools as described before.

3) Examination of the Projection Method

The numbers of required classrooms shall be projected on the basis of the average of required classrooms for the past 4 years (1998-2001), calculated from the number of pupils of each year.

4) Projection of Number of required Classrooms

i) Calculation of required classrooms "A" at each school

Required classrooms shall be projected based on the average of the total number of pupils at each school for the past 4 years (1998~2001).

$$A = (\text{Average of Req. Classrooms for the past 4 year}) = (P1/40 + P2/40 + P3/40 + P4/40) / 4$$

*P1= total number of pupils in 1998, P2= 1999, P3= 2000, P4= 2001.

ii) Projection of required classrooms (Shortage of classrooms counted as of the present) "B" at each school.

$$B = A - E$$

*E: Existing classrooms, which are still sustainable to use.

iii) Projection of number of classrooms to be constructed "C"

According to the standard primary school plan for the urban area "type A", drawn out by KZNDEC, the maximum number of classrooms is 25 or 27. Also, according to "Physical Resource Planning Manual" (March 2000) formulated at the national level, the maximum number of classrooms for a primary school recommended is 24 and the number of pupils is less than 960.

In this project, the maximum size of a school is taken to be limited to the maximum recommended in “Physical Resource Planning Manual”, so that the number of classrooms exceeding 24 (at one primary school) will not be taken into consideration, because of the following reasons.

- By having a large number of pupils, difficulties arise in the operation and management of school, such as in evaluations of pupils and educators, management of facilities, holding conferences with SGB, etc., all of which causing overworking of principal.
- The project aims at providing as many classrooms and schools as possible within the limit of the cooperation budget.
- In view of preventing the large schools growing larger and also of distributing the grant aid equally to those large and small schools.

With this consideration and as a result of the site survey, the following cases are assumed.

1. When “E” is 24 or more

$$C = 0$$

2. When “E” is less than 23

a) In case (B+E) is 24 or more

$$C = 24 - E$$

b) In case (B+E) is less than 23

$$C = B$$

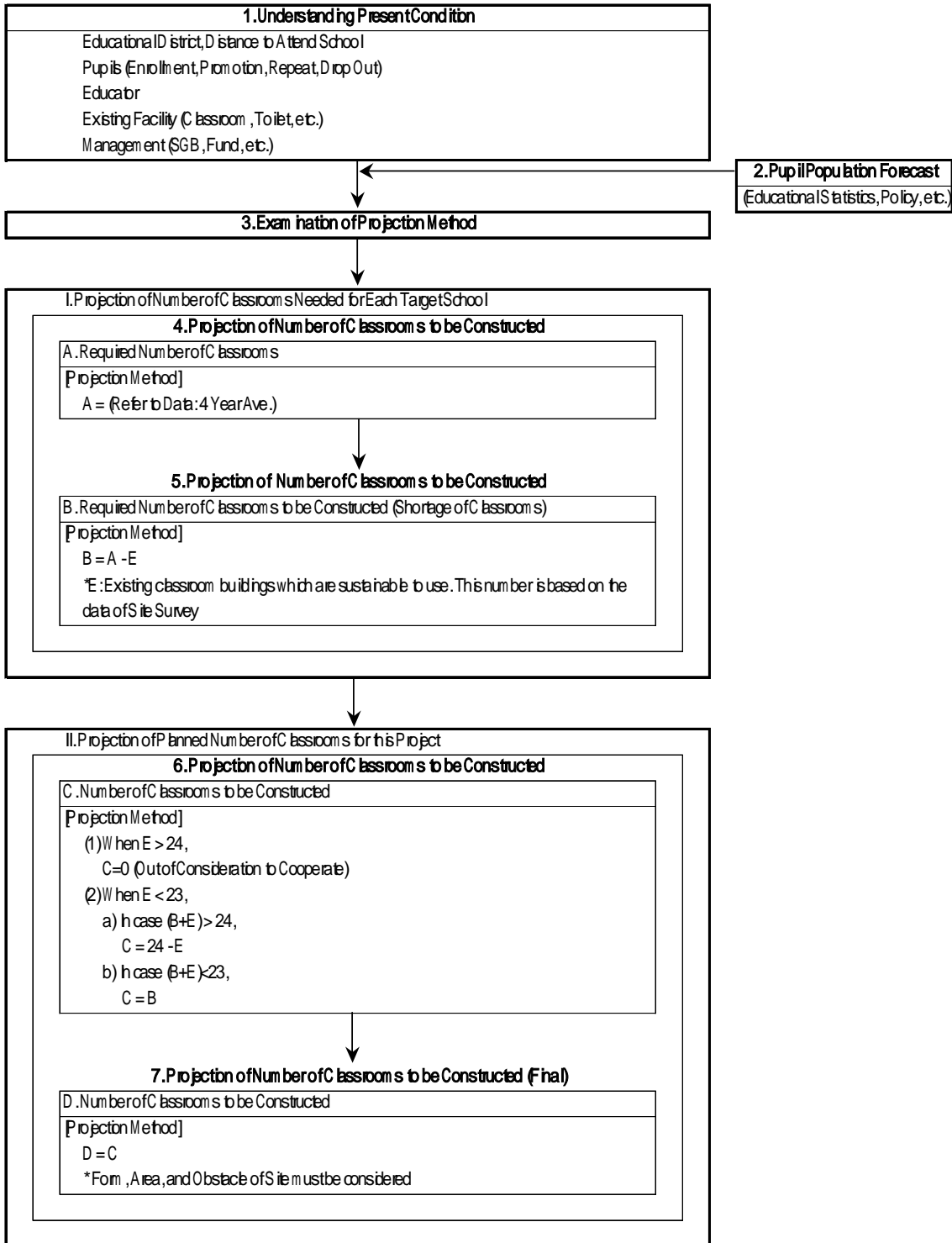
vi) Projection of Number of Classrooms to be constructed “D” (Project Target Schools)

In case there is no problems existing at the target schools, with the sizes, shapes of the sites and no obstacles in the sites

$$D = C$$

From the above, the flow chart for projecting the number of classrooms, to be constructed, is as follows.

Dwg 2-1: Chart of Projection Process



(4) Result of the selection of project target schools

Referring to the criteria for the selection of the project target schools, described in the preceding clause, firstly, 2 schools - one school which didn't submit land verification documents at the time of survey and the other which is in a process of shifting school site (the present site is inappropriate) - are to be excluded from the project target. And also, as a result of calculating required classrooms, 2 other schools which are considered not having any shortage of classrooms (calculated on the basis that 24 classrooms are a maximum for a school) are excluded, therefore, the total number of project target schools is 27 and the total classrooms to be constructed becomes 215.

Table 2-3: Projection for Required Classrooms

No.	School Name	District	No. of Pupil	Req. CRs (4 Yr. Ave.)	Usable Existing CRs	CRs to be Constructed	Remarks
1	Cezwana P	Ub	1,365	33	17	7	
2	M fngose P	h	959	23	9	14	
3	M akhana P	h	1,449	35	20	4	
4	N be la P	Ub	899	22	10	12	
5	Holy Family P	h	1,155	28	13	11	
6	Ophondweni P	h	1,030	25	19	5	
7	S t qaka tha P	Ub	930	22	9	13	
8	Bhekabantu P	h	838	20	8	12	
9	L buyile P	h	654	15	6	9	
10	Zam azama P	h	1,201	29	24	0	x
11	Enku isweni P	h	588	14	6	8	
12	Esbon isweni P	h	729	17	9	-	x
13	Thengani P	h	827	20	9	11	
14	Ekuhle ni P	h	828	20	11	9	
15	Endabeni P	h	1,119	27	19	5	
16	M aphinde la P	h	703	17	6	11	
17	M engu P	h	656	15	8	7	
18	N tkozwani CP	h	837	20	11	9	
19	Em bad eni P	h	760	18	14	4	
20	M adeya P	h	668	16	11	5	
21	M zki P	h	591	14	8	6	
22	Sam bane CP	h	725	17	9	8	
23	Shem ula P	h	650	15	9	6	
24	S t Joseph Public P	h	592	14	5	9	
25	S t Philip P	h	1,330	33	26	0	x
26	Thand izwe P	h	712	17	7	10	
27	The lam ama P	h	571	13	7	6	
28	Esphah leni P	Ub	595	14	8	6	
29	H bkoh bko P	Ub	537	13	10	3	
30	M bazwana P	Ub	1,113	27	20	-	x
31	M nqobokazi P	Ub	1,030	25	19	5	
Total			-	638	367	215	

5. Other Components

(1) Principal's rooms, Teacher's rooms, and Store

Principal's rooms and teacher's rooms are used for multi-purposes, such as for meeting of teachers, maintenance of educational materials, preparing of documents, health care for pupils and all other works related to school management. Store is provided with shelves at the walls, and is used for storing teaching materials, textbooks and administrative papers.

Of all the 31 target schools, 19 schools possess a principal room, 9 schools possess a teacher's room, and 22 schools possess a store. At some of the schools, principal rooms and teacher rooms are seen being used for storages. Furthermore, at 6 schools, whereas classrooms are short, some classrooms are used as principal room, teacher room, or /and store.

KZNDEC is placing the improvement of school management and maintenance as one of the most important issues among other educational measures and is beginning to allocate, although still very few, administrative staff to some of the schools. In this project, it is judged that principal rooms, teacher's rooms, and stores are essential for ensuring proper school management, and, therefore, a set of principal's room, teacher's room and store is planned to the schools where required with the size projected accordingly to the scale of each school.

(2) Toilet

Of all the 31 target schools, 9 schools do not have toilet at all, one school has a toilet used for both male and female, and at 5 schools a toilet is equipped separately for each male and female. 17 schools have more than one toilet separately for pupils and for teachers, and for male and female. At about a half of the target schools, toilets are made of simple structured booths.

Although improvement of toilet facilities for schools is another important issue for KZNDEC, little progress has been made in this respect due to the lack of budget. There is a toilet project being implemented by NGO under the control of Welfare Department, but it does not cover the 31 target schools in this project. In this project, therefore, toilets (separate toilets for male and female) are to be provided for to each school, but with the numbers projected so as to meet the number of classrooms to be newly constructed.

For treatment of sewage, a simplified type of septic tanks to be provided enabling secondary treatment of sewage water before leading to permeation holes.

(3) Rain Water Tanks

Securing of water at school is essential from a view of providing basic human needs and sanitation. 2/3 of the schools surveyed are equipped with more than 2 water tanks and 11 schools with 1 or 0. While water is not sufficient at most of the schools, some of the schools

are buying water in polyethylene containers and keeping them in the classrooms. Water piping systems are seen at some of the schools, but are not being utilized, because of difficulties in maintenance.

In this project, provision of water tanks is judged essential for improving the present water supply situation as described above. Considering that the minimum size of a building block is planned of 3 classrooms, and also assuming the amount of rainwater to be collected (calculated from the rainfall in the area and the roof size of each building block), installation of two numbers of rainwater tanks is planned per 3-classroom unit.

(4) Furniture

Desks and chairs for pupils and teachers, and black boards are to be provided for newly built classrooms. To comply with the present learning methods and the wishes of KZNDEC, desks shall be of 2:1 in proportion and chairs of bench type.

2-3 Basic Design

2-3-1 Design Concept

1.Policies in respect of Natural Condition

The climate in the region belongs to subtropical climate and mild in general, (monthly average temp: 32.2-25.1 highest, 21.2-8.7c lowest). Natural conditions that must be considered in the design of the project are topography, wind force and direction, and rainfall. No consideration for earthquake is necessary in this area.

The topography at most of the sites are flat or have slight slopes; therefore, the buildings should be plotted along the contour, leaving the natural features of the site ground remain as much as possible, so that enabling to reduce construction cost as a whole and at the same time minimizing the cost born by the South African side. And to cope with the washing away of the earth around the buildings by rainwater, concrete paved trenches shall be provided along the buildings. Winds usually prevail from South or South West or opposite and especially strong during the rainy season. Damages by tornadoes are seen at some of the areas but none at the schools. To protect the buildings from wind and rain, the projection of eaves shall have adequate depth (especially at entrance side). In consideration of high humidity during the rainy season, windows shall be large enough to secure natural and adequate ventilation.

2.Policy in respect of Grade of the Facilities

The grades of the facilities shall be in principle equal to the standard specification of the KwaZulu-Natal Province, specifically adopted in Ulundi Region, and wherever necessary improvements or modifications shall be made. The portions that need improvements are roofing (material containing asbestos must be changed to some other material without asbestos), and pit type toilets. In addition the local building situation, particularly the condition in procurement of materials, shall be taken into consideration. In this project at most consideration is given to the reduction of construction cost and, therefore, concrete block type construction is employed, instead of brick wall construction that are common in the area And also further to the studies on durability and easy maintenance of the facilities, the climatic characteristics in the area and the site condition shall be taken into consideration upon determining the specifications.

3. Policy for utilizing local contractors and local materials

In principle all the construction materials shall be procured locally so as enabling local contractors participate in the work and at the same time creating job opportunities within the communities.

4. Policy in respect of Capacity of Implementing Organization

Basically the facilities shall be designed free of maintenance to reduce the maintenance expenditure of the South African side. And upon selection of finishing materials, securing of durability at all portions and easy repair in case of damages shall be taken into consideration to enable easy and inexpensive maintenance and operation. Materials for windows and doors, ceilings and floors which require repair or replacement in future shall be chosen from those complying with locally adopted standard specifications. And at the delivery of the facilities the consultant shall prepare a manual that explains maintenance and operation method of the facilities, including maintenance method of septic tank.

5. Policy in Respect of Work Period

Assuming that the project is implemented under Japanese Grand Aid Cooperation, Detail Design period shall take approximately 4 months, and construction starts after tendering, signing of construction contract and acquisition of visa for Japanese engineers (about one month required). According to the experience in other province, the period of construction for 27 target schools is assumed to be 12 months, comprised of 3.5 months preparation period and 8.5 months construction. According to the schedule assumed at present, the finishing stage of the construction period is to take place in the rainy season, therefore, adequate caution shall be taken to cope with the rain by employing appropriate construction method, and material procurement plan. And also selecting of sub-contractors during the 2 months' preparation period is important to achieve smooth completion of the project within a specific time limit.

2-3-2 Basic Design

1. Plot Plan

Plotting of new classrooms will be planned in consideration of the following.

- 1) New classrooms to be plotted so as totally functioning with the existing facilities. And also consideration shall be given to activate educational, learning activities. Specifically arrange classrooms so as to create enclosed areas, suitable for outside activities of pupils or for community meetings.
- 2) Consideration to be given to prevailing winds.
- 3) Orientation in relation to the sunshine to be considered.
- 4) Toilets shall be plotted separately with an adequate distance from the classroom buildings, so as to avoid smell and to give space for maintenance.
- 5) The foundation to be kept at a minimum height; care shall be taken for smooth rainwater drain so as not causing earth erosion.

2. Architectural Plan

(1) Basic Policies for Architectural Planning

- 1) Plan a construction method that enables construction of various scales of school buildings executed within a limited work period.
- 2) Plan specification of buildings to conform to the local climatic condition and other natural features.
- 3) Plan specification (basically) to meet the specification of KZNDEC, but with some improvement be incorporated if necessary.

(2) Scale composition of required facilities.

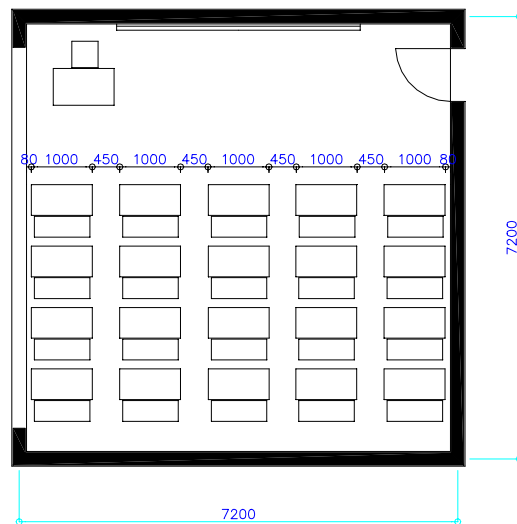
1) Classrooms

Size of classroom

The floor area of classroom shall be 50 sq.m (40pupils), complying with the KZNDEC standards. The appropriateness of the floor area is examined by planning the layout of furniture as shown on the Drawing 1-2. For accommodating 40 pupils 20 sets of desks and bench type chairs are to be planned. A set of desk (1 m x 0.5 m) and chair is for 2 pupils. The dimensions of a classroom required for laying 20 sets of pupils desks and chairs and a set of teacher's desk (1mx0.6m) and chair are as follows.

If desks and chairs are laid in horizontally 5 rows and vertically 4 lines as shown on the Drawing 1-2. Width is calculated: $1\text{ m} \times 5\text{ rows} + 0.45\text{ m} \times 4\text{ (passage)} + 0.08 \times 2\text{ (space)} + \text{wall thickness} = 7.2\text{ m}$, and Depth: $(0.5\text{ m} + 0.55\text{ m}) \times 4\text{ lines} + \text{back space } 0.4\text{ m} + \text{front space } 2.4\text{ m} + \text{wall thickness} = 7.2\text{ m}$

Therefore, the size of a classroom becomes, $7.2\text{ m} \times 7.2\text{ m} = 51.84\text{ sq.m}$ and area per pupil is 1.29 sq.m. This size is the minimum for 40 pupils class to enable group lesson.



Dwg. 2-2

2) Principal's and Teacher's Rooms and Stores

To cope with a various sizes of the schools, 4 types of units are planned. Firstly, the schools are grouped into two groups, schools of small scale (13-19 classrooms) and those of large scale (20-24), 14 schools of small scale and 13 schools of large scale respectively. And then the schools in each group are classified in two standard types, one with all necessary components and the other with only teacher's rooms. The size of teacher's room is planned at 2.6 sq.m/classroom complying with the standard design of KZNDEC. Since the average number of classrooms at the small-scale school group is 15 and that of the large scale 22, the sizes of teacher's room for the two groups are projected as follows.

Small-scale type teacher's room

=39.0 sq.m

Large-scale type teacher's room

=57.2 sq.m

From the basic module (0.4 m), determined based on the width of classroom 7.2 m, the above figures are adjusted as follows.

Small type: $7.2 \times 5.6 = 40.32$ sq.m

Large type: $7.2 \times 8.0 = 57.60$ sq.m

By taking the minimum depth of principal's room and store be 2.4 m, the floor area of Principal's room of each type become:

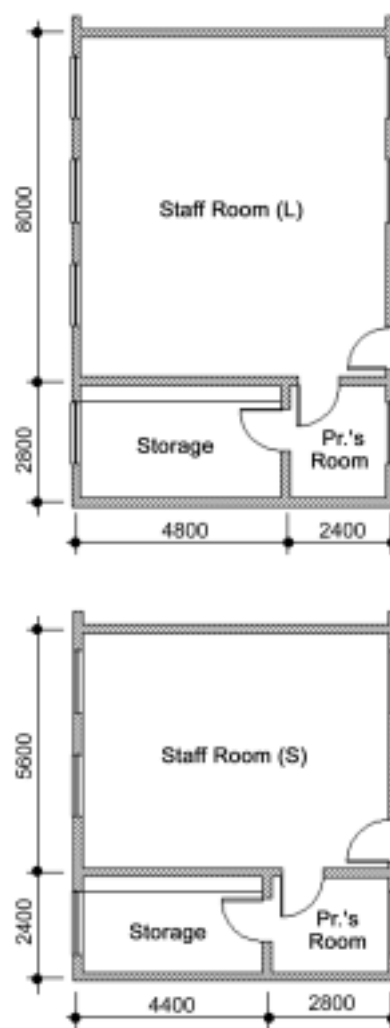
Small type: $2.8 \times 2.4 = 6.72$ sq.m

Large type: $2.4 \times 2.8 = 6.72$ sq.m

The floor area of store of each type is determined as follows.

Small type: $4.4 \times 2.4 = 10.56$ sq.m

Large type: $4.8 \times 2.8 = 13.44$ sq.m



Dwg. 2-3: Above- Type AL (Type TL)

Floor area of store per classroom will be therefore 0.88~0.60 sq.m for small type and 0.81~0.59 sq.m for large type. The sizes are not being very large but just of suitable sizes for storing teaching materials.

3) Toilets

In this project, the required number of toilets shall be planned in conformity with the standards (Number of classrooms \times 40 person \div 25) mentioned in “Physical Resource Planning Manual”. And male and female ratio of 1:2 is applied for booths and space for urinal is provided on the basis that the number of users is 2 times of the number of booths. Also for teachers, two toilets per school, one for male and the other for female to be provided. The standard area for each booth is set at 1.5 sq.m.

As shown in table 2-4, toilet unit types for pupils are standardized in 4 types and planned so as to meet various sizes of schools.

Table 2-4: Toilet Type

Type	No. of CRs	Contents			Area (m ²)	No. of Schools
		Boys Booths	Urinal Length (m)	Girls Booths		
W-3	3-6 CRs	3	3	6	24	11
W-4	7-8 CRs	5	4	8	30	4
W-5	9-10 CRs	4	5	10	33	5
W-6	11-14 CRs	6	6	12	42	7

4) Rainwater Tanks

Calculation for Required Water

For 3 classrooms; 120 pupils + 3 teachers = 123

Monthly consumption is assumed:

$$123 \times 1.5 \text{ L} \times 20 \text{ days} = 3,700 \text{ L (3.7 cu.m)}$$

Reservable Water

Roof projection area of 3 classrooms is 220 sq.m, and the average rainfall per year is 648 mm. Then, reservable rain water per year is 142 cu.m in average and when calculated separately for rainy season and dry season, monthly rainfall and reservable rain water for each season are assumed as follows.

- Rainy season (October to March)
 - $89 \text{ mm (monthly rainfall)} \times 220 \text{ sq.m} \times 80\% = 15.6 \text{ cu.m/mm}$
- Dry season (April to September)
 - $19 \text{ mm (monthly rainfall)} \times 220 \text{ sq.m} \times 50\% = 2.1 \text{ cu.m/mm}$

For required water per month is 3.7 cu.m. In rainy season there is more than enough water; therefore, it has been examined whether the rainfall during the dry

season together with the water reserved during the rainy season is adequate to meet the consumption in the dry season.

Supply

$$2.1 \text{ cu.m (monthly rainfall)} \times 6 \text{ months} = 12.6 \text{ cu.m}$$

$$\text{Water reserved in the tanks} = 9.0 \text{ cu.m}$$

$$12.6 \text{ cu.m.} + 9.0 \text{ cu.m} = 21.6 \text{ cu.m}$$

Consumption

$$3.7 \text{ cu.m} \times 5 \text{ months (exclude holiday)} = 18.5 \text{ cu.m}$$

From the above study, 2 numbers of 4.5 cu.m tanks are sufficient for 3 classrooms.

(3) Standardization and Combination of Classroom Buildings

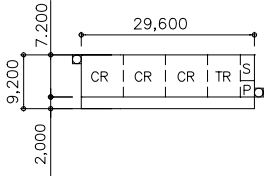
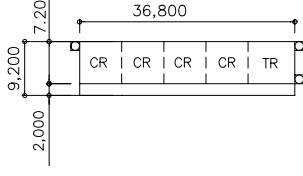
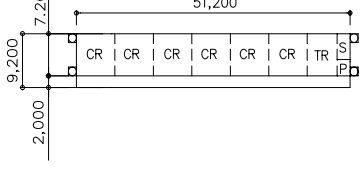
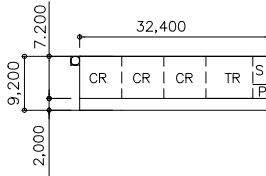
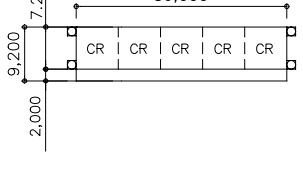
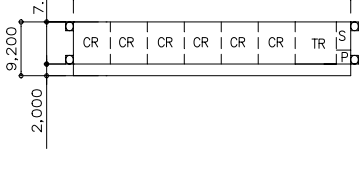
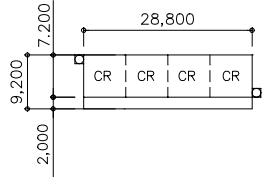
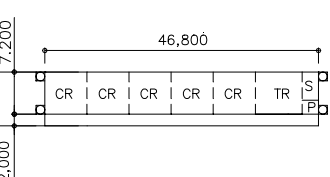
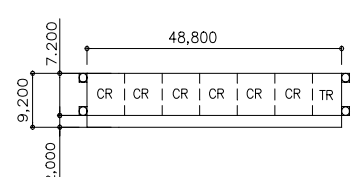
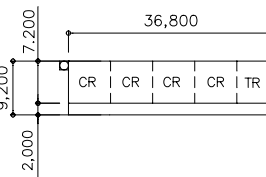
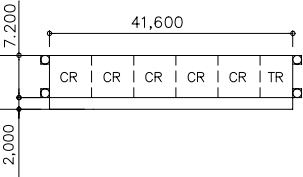
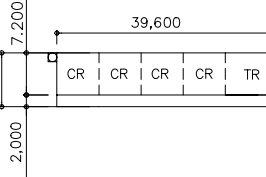
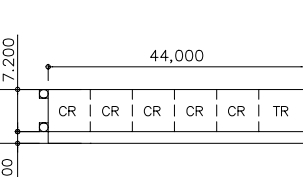
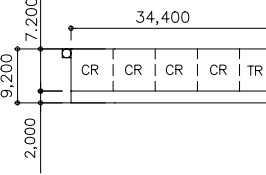
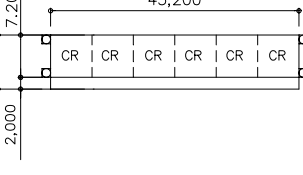
The target schools are grouped into 12 types in accordance with the number of classrooms, ranging from 3 to 14. In order to enable efficient implementation of construction and appropriate layout of the sites, classroom buildings are standardized so that the standard units can be applied as follows.

Table 2-5: Standard unit types of classroom buildings

Type	No. of CRs	Office/ Storage	Rain Water Tank (45t)
Type-3A	3CRs	A	2
Type-3AL	3CRs	AL	2
Type-4	4CRs	X	2
Type-4A	4CRs	A	3
Type-4AL	4CRs	AL	3
Type-4T	4CRs	T	3
Type-4TL	4CRs	TL	3
Type-5	5CRs	X	4
Type-5AL	5CRs	AL	4
Type-5T	5CRs	T	4
Type-5TL	5CRs	TL	4
Type-6	6CRs	X	4
Type-6A	6CRs	A	4
Type-6AL	6CRs	AL	4
Type-6T	6CRs	T	4
Type-6TL	6CRs	TL	4

A, AL: comprised of the principal room, office, and store. T, TL: room only for office

Dwg.2-4: Standard types of classrooms (S =1/500)

<p>Type-3A</p> 	<p>Type-4TL</p> 	<p>Type-6A</p> 
<p>Type-3AL</p> 	<p>Type-5</p> 	<p>Type-6AL</p> 
<p>Type-4</p> 	<p>Type-5AL</p> 	<p>Type-6T</p> 
<p>Type-4A</p> 	<p>Type-5T</p> 	<p>Type-6TL</p>
<p>Type-4AL</p> 	<p>Type-5TL</p> 	
<p>Type-4T</p> 	<p>Type-6</p> 	<p>CR: Classroom P: Principal's Room TR: Staff Room S: Storage</p>

Dwg.2-5: Standard types of toilets

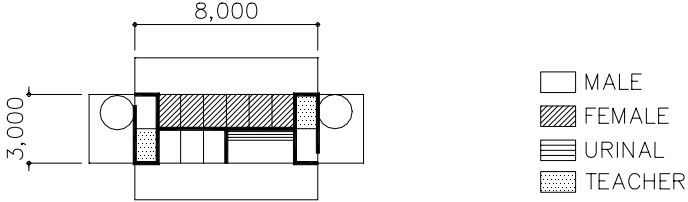
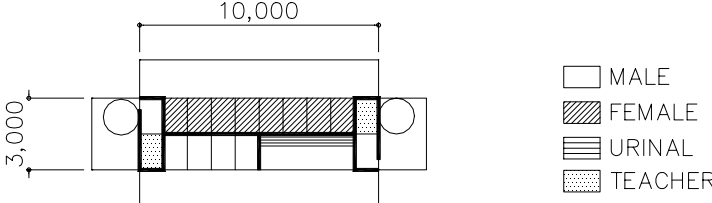
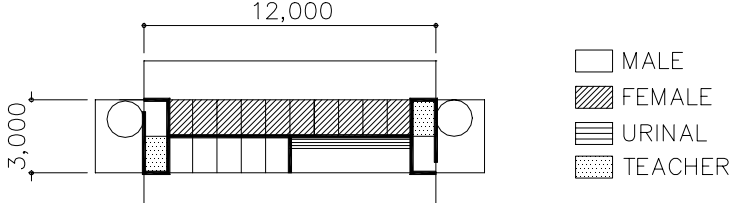
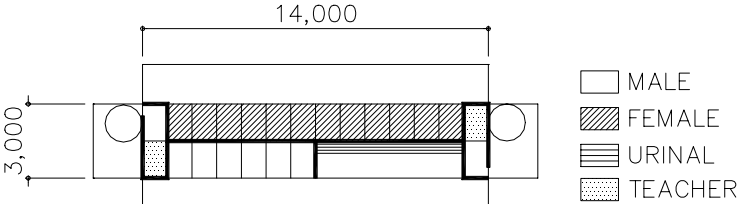
<p>W-3</p>	
<p>W-4</p>	
<p>W-5</p>	
<p>W-6</p>	

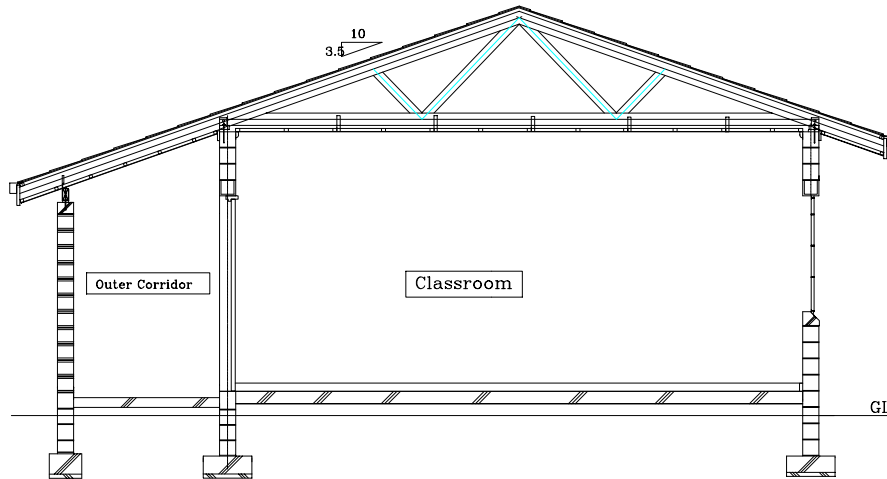
Table 26: Facility Organization

No.	School Name	CRs to be Constructed	Unit Types	Rainwater Tanks	Toilet Types	Area of CRs (sq.m)	Area of Toilet (sq.m)	Area of Pr. Staff RMs/Store (sq.m)	Area of Corridor (sq.m)	Total Area (sq.m)
1	Cezwana P	7	4+3AL	4	W-4	362.88	30.00	77.76	122.40	593.04
2	Mfingose P	14	4AL+5+5	11	W-6	725.76	42.00	77.76	223.20	1068.72
3	Makhana P	4	4AL	3	W-3	207.36	24.00	77.76	79.20	388.32
4	Nbela P	12	6+6AL	8	W-6	622.08	42.00	77.76	194.40	936.24
5	Holy Family P	11	5+6	8	W-6	570.24	42.00	0.00	158.40	770.64
6	Ophondweni P	5	5TL	4	W-3	259.20	24.00	57.60	88.00	428.80
7	Siqakana P	13	4+4AL+5	9	W-6	673.92	42.00	77.76	208.80	1002.48
8	Bhekabantu P	12	6+6TL	8	W-6	622.08	42.00	57.60	188.80	910.48
9	Lbuyib P	9	4T+5	7	W-5	466.56	36.00	40.32	140.80	683.68
10	Zamazana CP									
11	Enkulisweni P	8	3A+5	6	W-4	414.72	30.00	57.60	131.20	633.52
12	Esbonisweni P									
13	Thengani P	11	5AL+6	8	W-6	570.24	42.00	77.76	180.00	870.00
14	Ekuhlehni CP	9	4TL+5	7	W-5	466.56	36.00	57.60	145.60	705.76
15	Endabeni P	5	5AL	4	W-3	259.20	24.00	77.76	93.60	454.56
16	Maphindela P	11	5+6	8	W-6	570.24	42.00	0.00	158.40	770.64
17	Mengu P	7	3A+4	4	W-4	362.88	30.00	57.60	116.80	567.28
18	Ntlozweni CP	9	4TL+5	7	W-5	466.56	36.00	57.60	145.60	705.76
19	Embadleni P	4	4	2	W-3	207.36	24.00	0.00	57.60	288.96
20	Madeya P	5	5	4	W-3	259.20	24.00	0.00	72.00	355.20
21	Mzki P	6	6T	4	W-3	311.04	24.00	40.32	97.60	472.96
22	Sambane CP	8	4+4A	5	W-4	414.72	30.00	57.60	131.20	633.52
23	Shenula P	6	6T	4	W-3	311.04	24.00	40.32	97.60	472.96
24	St. Joseph's Public	9	4T+5	7	W-5	466.56	36.00	40.32	140.80	683.68
25	St. Philip's P									
26	Thandizwe P	10	5+5T	8	W-5	518.40	36.00	40.32	155.20	749.92
27	Thebama P	6	6A	4	W-3	311.04	24.00	57.60	102.40	495.04
28	Esphaheni P	6	6T	4	W-3	311.04	24.00	40.32	97.60	472.96
29	Hlokhloko P	3	3A	2	W-3	155.52	24.00	57.60	59.20	296.32
30	Mbazwana P									
31	Mngobokazi P	5	5AL	4	W-3	259.20	24.00	77.76	93.60	454.56
Total		215		154		11145.60	858.00	1382.40	3480.00	16866.00

(4) Sectional Planning

In Sectional Planning, considering ventilation, lighting and heat insulation, ceiling height shall be planned at 3,200 mm high to secure an adequate air space per person and window openings on both sides shall be made sufficiently large to enable natural ventilation and to create pleasant indoor environment. The floor height shall be set at 300 mm above the highest level of ground. The floor shall be of 120 mm thick concrete reinforced with steel mesh and finished with damp proof sheet beneath the floor. As a measure against weather during the rainy season, covered exterior corridor is planned, and the eaves are to be made well protruding to enable protection from the rainstorms. Roof shall have a slope of 3.5/10, and a large attic space is to be secured to enable good air ventilation and heat insulation effect.

Dwg. 2-6



(5) Structural Plan

In consideration of the technical level of local sub contractors and also in view of securing durability and enabling easy maintenance, the structural system shall be of locally adopted system by using concrete blocks for walls and wood frame trusses for roofing.

The calculation standards shall basically comply with the South African Standard (SABS). In addition, with respect to wind force, seismic force and other elements linked to the natural condition, the calculation shall be made based on locally observed data. Permissive earth bearing strength is 10 t/sq.m

Dead Load:	Loads comprised of structure, finishing materials, etc.
Live Load:	Conform with SABS 5.4.4 Floor: 180kg/sq.M
Wind Force:	Conform with SABS 5.4.4.2-5.5.4
Seismic Load:	Not considered

The main loads that must be considered in the structural calculation are dead load, live load and wind load. Seismic load will not be considered as no record of earthquake is observed in the past. Concrete shall be ordinary concrete ($F_c = 180 \text{ kg/sq.cm}$), and prepared in principal at each site by using concrete mixing plant.

3. Equipment Plan

(1) Electric equipment

According to the site survey, only one site has electric supply. With the prospect of the future electrification plan, all the school buildings are to be provided with conduit piping for future take-in and distribution wiring and galvanized steel box for future installation of distribution panel, all of which are to be embedded within the wall.

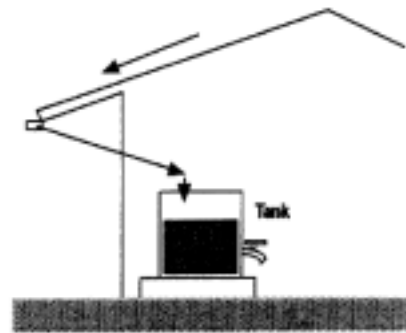
(2) Ventilation equipment

The facilities are designed so as to enable smooth natural ventilation and to create a pleasant interior environment. No mechanical ventilation system will be employed. Sufficient numbers of windows shall be provided for ventilation.

(3) Water Supply, drain and sanitary equipment.

1) Water Supply

As the most of the sites have no electricity provided within the premises, water shall be supplied by means of gravity. In this project rainwater will be collected from roofs to water tanks and supplied through faucets fixed at the bottom level of the tanks.



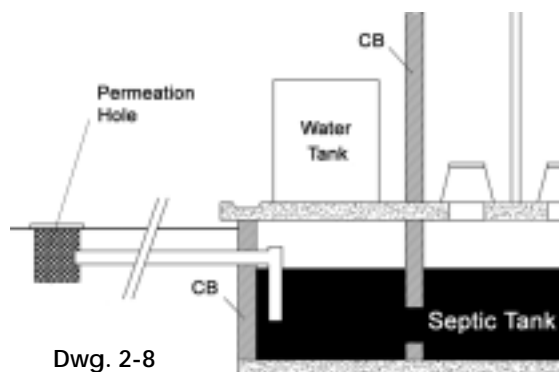
Dwg. 2-7

2) Drainage

In order to protect the ground from erosion, may be caused by rain water, water drain trenches are to be provided along the exterior walls of buildings with a slope from the upper side of the ground to the down side.

3) Toilets

Because of the scarcity of water in the sites, no wash toilet system will be employed. For treatment of sewage, a simplified type of septic tanks to be provided enabling secondary treatment of sewage water before leading to permeation holes. And a water tank per each toilet building (2 tons per each toilet unit) will be provided for washing purpose.



Dwg. 2-8

4. Construction materials plan

The materials to be used in the project shall be basically chosen from local products, carefully selected with consideration on durability, easy maintenance, easy procurement, workability and cost, etc..

(1) Selection of construction method.

Generally in the case of school construction implemented in Ulundi Region, concrete block wall construction is one of the major methods (some of the schools are made of brick wall construction). Also in the School Building Programme (SBP), currently being implemented by KZNDEC, faced brick wall and plastered concrete block wall construction are the standard construction methods for the school buildings. It is generally said that, of these methods, faced brick wall is the most durable but quite expensive and plastered block wall (although cost saving compared to faced brick) has a weakness of cracking on the plastered surface so that creating a maintenance problems.

In the project, the facilities, with the premises of preserving the durability and the quality above a certain satisfactory level, shall be planned so as to enable reduction of construction cost as much as possible and at the same time to alleviate maintenance problems after the completion of the project.

In consideration of the above, the material of wall and construction method for the project have been chosen on the basis of:

- 1) To be of low cost.
- 2) To have durability and quality above a satisfactory level.
- 3) To be of locally adopted material and method.
- 4) To be of easy maintenance.

As a result of the thorough studies, it was concluded that colored block construction method is appropriate from the point of reducing construction cost and also simplifying the construction process.

(2) Major materials

1) Roof

The roof framing will be of wooden trussed, of the type generally used for school buildings in the project area, and the roofing material to be colored (epoxy-coated) steel sheets.

2) Wall

As described above, faced color block wall construction method to be employed. To protect from transmission of dampness, waterproofing coat shall be applied to the exterior; to the interior side no finishing to be provided.

3) Windows & doors

The windows shall be of steel of ordinary school specification, treated with coats of anti-rust material and finished with paint. The doors shall be of hard wood complying with the local standard specification. A security door made of steel to be installed at every office entrance.

4) Ceiling

Cement boards to be used for false ceiling and finished with paint, all complying with the local standards.

5) Floor

The floors of classrooms, office, exterior corridors, stores, and toilets shall be of concrete trowel finish.

Below are shown comparison of construction methods in Table 2-7 and materials plan in Table 2-8.

Table 2-7: Comparison of Methods (Construction Types)

	1 Brick Wall Construction	2 Hollow Conc. Block	3 Cobred Hollow Block
Description	Face Brick for Exterior, Stock Brick Interior	Hollow Block Walling Reinforced with Steel Bar, Finished with Plaster	No Plastering and Painting Required
Durability	Good	Good	Good
Transportation	Heavy, but better than blocks because of small size	Lighter than bricks, but breakable	Lighter than bricks, but breakable
Skill	Required skilled labour	Required plastering and painting	Require skilled labour
Maintenance	Free of Maintenance	Require repainting	Free of maintenance
Procurement	No problem	No problem	Manufactured in E.L. depot in Umata, or Port Shepstone.
Cost	1	09	08
Evaluation	Good running cost.	Block is easy to break out.	Cheaper than "2".

Table 2-8 Comparison of Major Materials

Item of Works	Exam	Materials & Specs.			Result of Adoption
		A	B	C	
Roof		Colored steel panel roof	Corrugated asbest os-cement roof	Cement roof tile	"B" is cheaper and familiar, but is containing asbest. "C" is fragile and weak against wind. Hence, "A" is adopted.
	Anti-Weathering				
	Anti-Cholridation				
	Workability				
	Cost				
Exterior Walls		Concrete Block, Plaster Paint	Brick masonry	Colored Concrete Block	"A" requires skilled labor. "B" is expensive. "C" when colored blocks are used is the best from the point of easy maintenance & workability. Hence, "C" is adopted.
	Anti-Weathering				
	Workability				
	Popularity				
	Cost				
Interior Walls		Concrete Block, Plaster Paint	Brick masonry, Plaster Paint	Colored Concrete Block	Due to the point of easy maintenance, "C" is adopted.
	Workability				
	Design				
	Maintenance				
	Cost				
Windows		Aluminum	Steel	Wooden	Steel windows are common and inexpensive and more durable than wooden. Hence, "B" is adopted.
	Water resist				
	Anti-Weathering				
	Popularity				
	Cost				
Floor		Concrete Trowel Finish	Vinyl floor tile	Ceramic tile	Due to the point of endurance and cost, "A" is adopted for toilet and corridor and clasrooms.
	Out-look				
	Endurance				
	Popularity				
	Cost				

: Best : Good : Fair

5. Equipment Plan

(1) Furniture

In the project furniture such as desk, chairs, and blackboards are to be provided for all of the newly constructed classrooms. The number of pupils' desk and chairs are calculated on the basis of 40 pupils per classroom. The desks and chair are of two sizes; small size for G1~G3, large size for G4~G9. The chairs for pupils shall be of bench type (long chair) chosen in consideration of the flexibility of seating capacity.

Below is the list of the furniture.

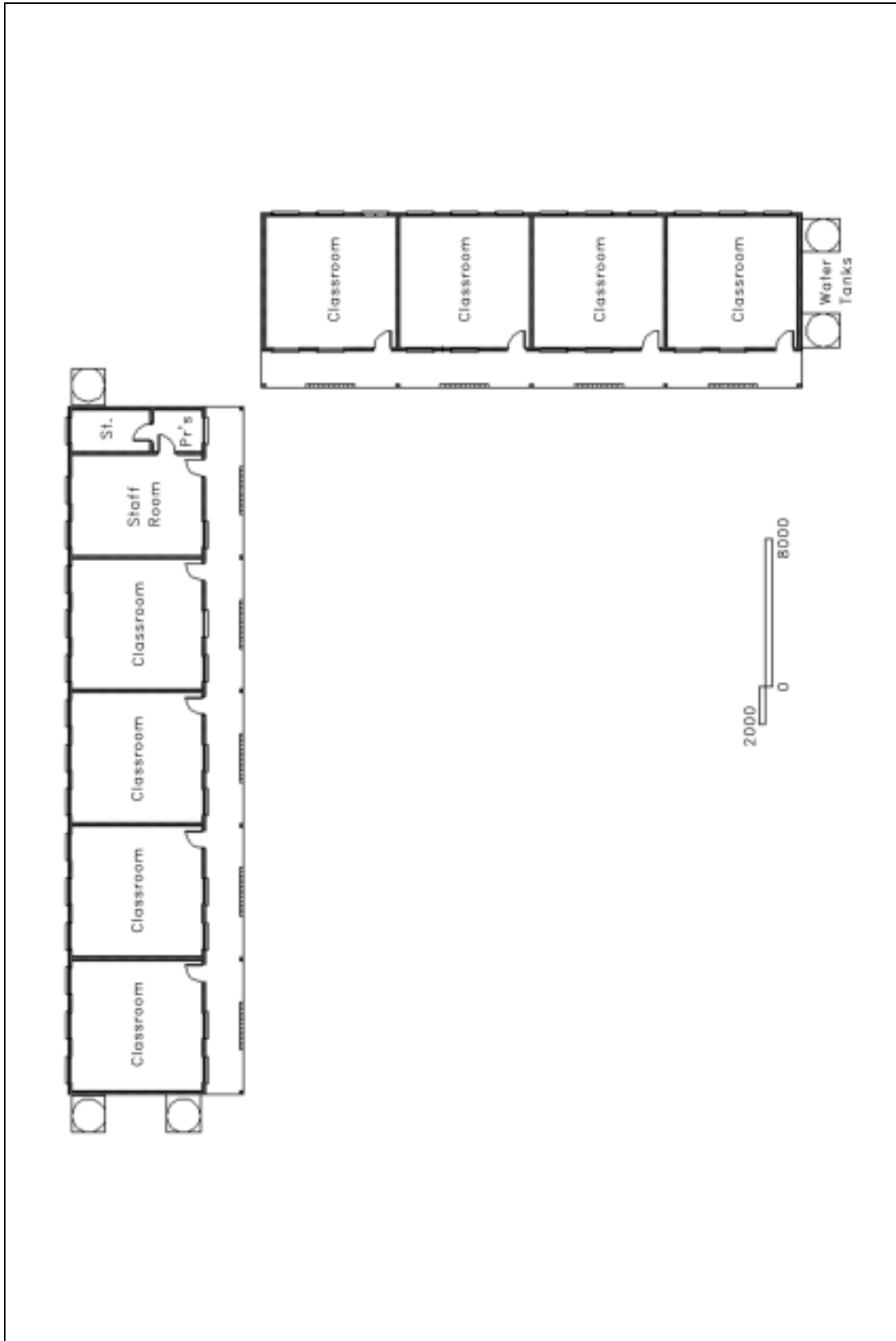
Table 2-9: Furniture List per School

No	Name of School	CRs to be Constructed	Teacher's Desk	Teacher's Chair	Pupil's Chair (Senior)	Pupil's Chair (Junior)	Pupil's Desk (Senior)	Pupil's Desk (Junior)	Blackboard
1	Cezwana P	7	7	7	80	60	80	60	7
2	Mfingose P	14	14	14	140	140	140	140	14
3	Makhana P	4	4	4	40	40	40	40	4
4	Nibela P	12	12	12	120	120	120	120	12
5	Holy Family P	11	11	11	120	100	120	100	11
6	Ophondweni P	5	5	5	60	40	60	40	5
7	Siqakatha P	13	13	13	140	120	140	120	13
8	Bhekabantu P	12	12	12	120	120	120	120	12
9	Libuyile P	9	9	9	100	80	100	80	9
10	Zamazama CP								
11	Enkulisweni P	8	8	8	80	80	80	80	8
12	Esibonisweni P								
13	Thengani P	11	11	11	120	100	120	100	11
14	Ekuhlehleni P	9	9	9	100	80	100	80	9
15	Endabeni P	5	5	5	60	40	60	40	5
16	Maphindela P	11	11	11	120	100	120	100	11
17	Mengu P	7	7	7	80	60	80	60	7
18	Ntokozweni CP	9	9	9	100	80	100	80	9
19	Embadleni P	4	4	4	40	40	40	40	4
20	Madeya P	5	5	5	60	40	60	40	5
21	Mziki P	6	6	6	60	60	60	60	6
22	Sambane CP	8	8	8	80	80	80	80	8
23	Shemula P	6	6	6	60	60	60	60	6
24	St.Joseph's Public P	9	9	9	100	80	100	80	9
25	St.Phillip P								
26	Thandizwe P	10	10	10	100	100	100	100	10
27	Thelamama P	6	6	6	60	60	60	60	6
28	Esiphahleni P	6	6	6	60	60	60	60	6
29	Hlokohloko P	3	3	3	40	20	40	20	3
30	Mbazwana P								
31	Mnqobokazi P	5	5	5	60	40	60	40	5
	Total	215	215	215	2300	2000	2300	2000	215

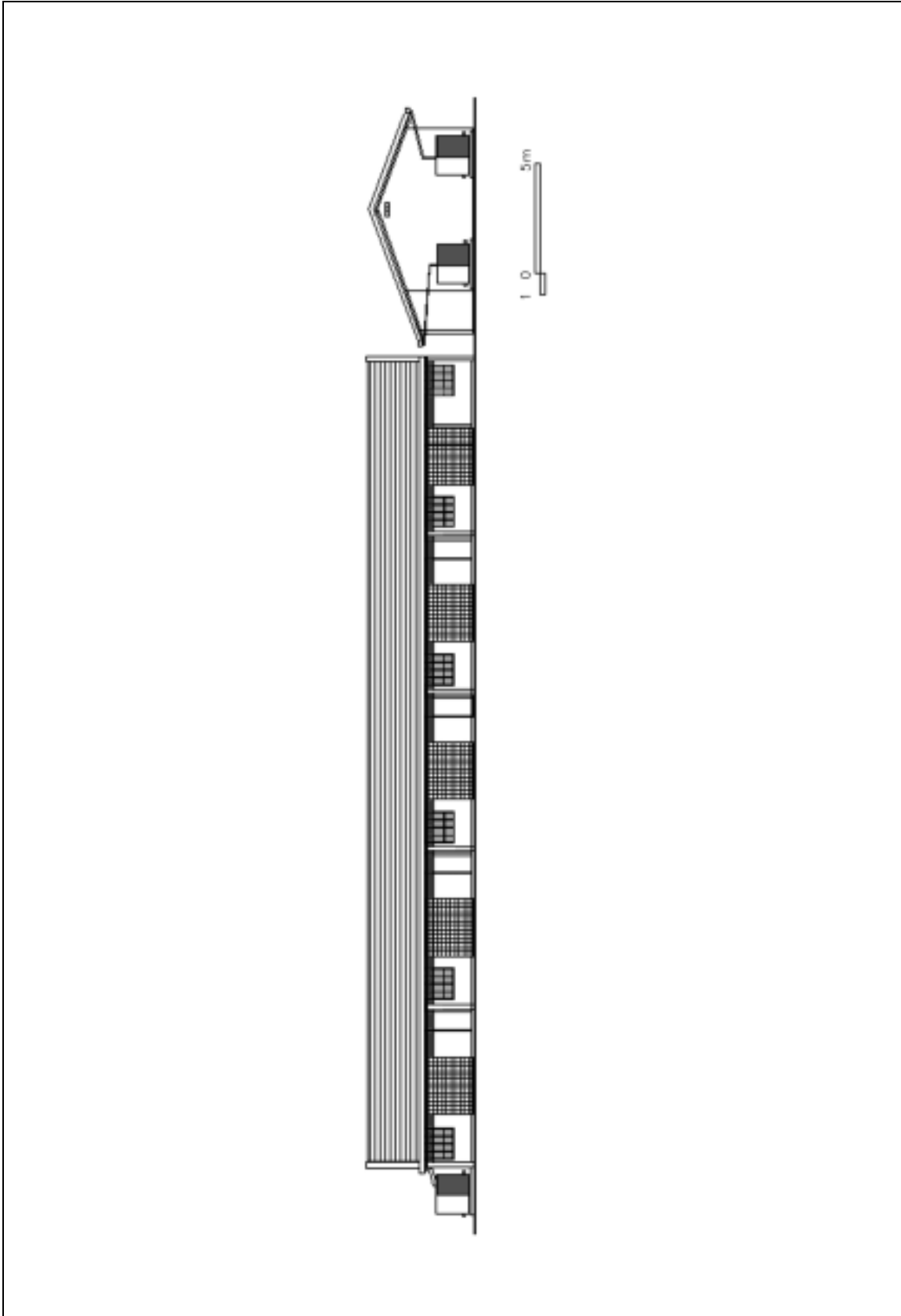
6. Basic Drawings

- (1) Floor Plan Drawing of Typical Classroom**
- (2) Elevation Drawing of Typical Classroom**
- (3) Floor Plan & Elevation Drawing of Typical Toilet**

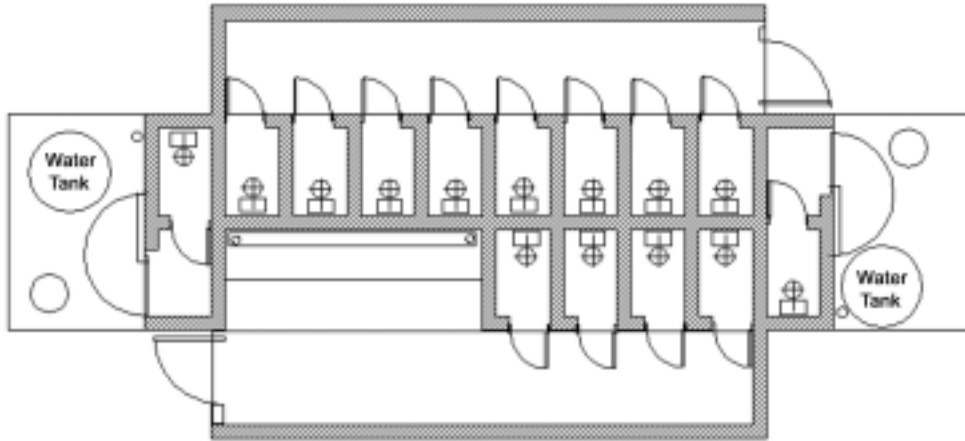
(1) Floor Plan Drawing of Typical Classroom (Type 4 + 4A)



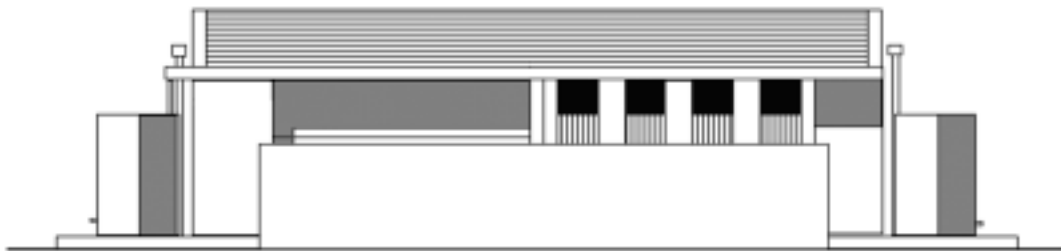
(2) Elevation Drawing of Typical Classroom (Type 4 + 4A)



(3) Floor Plan & Elevation Drawing of Typical Toilet (Type:W-4)



PLAN



ELEVATION

2-4 Implementing Organization of the Project

2-4-1 Organization

The Department of Education and Culture of the Province of the KwaZulu-Natal shall be the implementing organ and the Physical Resource Planning of the Department acts as the execution agent of the project. The Department of Education of the Central Government is responsible for undertaking the procedures required between the two countries: South Africa and Japan.

Table 2-10: Role of Departments related to the project

Departments	Role
National Dept. of Education	Conclusion of Exchange of Note and Supervision on the Contents of this Project.
Provincial Dept. of Education	Implementation Department. Signing of Agreement & Contract. Procedures for Banking Arrangement and Authorization for Payment.

2-4-2 Budget

In relation with the implementation of the project, the access roads to the sites shall be repaired by the South African side.

2-4-3 Personnel required and Technical level

(1) Implementation of the Project

The DEC of KwaZulu-Natal has experience in school projects and implementing organization is readily maintained. In the case of the project funded by the provincial government itself, the Department of Public Work act as the execution agent of KZNDEC, designating the project manager, consultants, etc. who support DPW by carrying out all works necessary in the course of planning and supervision, such as preparing tender documents, giving advices on selection of contractors, and supervising construction works. Therefore, no problem exists in the implementing system of SA side.

CHAPTER 3
IMPLEMENTATION PLAN

CHAPTER 3 IMPLEMENTATION PLAN

3-1 Implementation Plan

3-1-1 Implementation Concept

(1) Basic procedures for Implementation of the Project

As for the procedures for the implementation of the project, first, the government of Japan appraises the project, based on the Basic Design Study report, and the results are submitted to the Cabinet for approval. The project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Government of Japan and the Government of South Africa.

The project shall be implemented on the basis of the contracts between the implementing organ of the South African side and Japanese consultant and contractor that are to be concluded in accordance with the rules of Japan's Grand Aid Schemes. These contracts shall be verified by the Government of Japan.

(2) Implementing organization

The responsible organ of the South Africa side for signing the Exchange of Notes shall be the Department of Education in the Central government of the Republic of South Africa.

The implementing organization of the project shall be the Department of Education in the provincial government of Province of Kwazulu-Natal and an implementing committee established with the director of the Physical Resource Planning division as the responsible person will manage the implementation.

As to the signing of the consulting agreement and construction contract, the Provincial Department of Education (herein after referred to as KZNDEC) shall be responsible for the signing. The implementing committee shall be responsible for the works required of undertaking by the South Africa side, such as preparation of school sites, giving approvals with regard to the payments stipulated in the contract, and other necessary procedures during and after the implementation of the project.

(3) Consultant

After the signing of the Exchange of Notes, KZNDEC shall sign an agreement with a Japanese consultant with regard to the detail design and the supervision for the execution of the construction. In order to enable smooth implementation the consultant shall be the same consultant who had undertaken the Basic Design Study.

After the agreement is verified by the Government of Japan, the consultant shall carry out preparing detail designs and tender document, based on the results of the Basic Design Study and through the consultation with KZNDEC and KZNDPW.

After the detail designs and tender documents are approved by both KZNDEC, the consultant will carry out on behalf of KZNDEC tendering procedures and assist KZNDEC in signing the construction contract, and after the signing of the construction contract the consultant shall proceed with the supervision of the construction until the completion of the project.

(4) Contractor

The contractor shall be a Japanese construction company with qualification meeting the regulation stipulated therein and shall be selected through general tendering.

At tendering the lowest tenderer shall in principle become a successful tenderer and sign a contract with KZNDEC.

After the contract is verified by the Government of Japan, the contractor shall execute the construction until the completion, and deliver to KZNDEC the completed facilities and furniture within the time limit stipulated in the contract.

Furthermore, about one month is required for acquisition of working visa in South Africa, therefore, the construction company shall take procedure for acquiring visa promptly after the verification of the contract by the Japanese Government.

(5) Local consultants and contractors

In order to secure smooth implementation of the project, it is judged quite effective to utilize local staff who are acquainted with the local building situation and the social environment of the sites which are most cases widely dispersed in the areas with underdeveloped infrastructures.

As the project area consists of two districts, each sites differing from each other, it is recommendable to utilize a plural number of contractors. And also, upon utilization of local sub-contractors, the Japanese contractors shall maintain the works consolidated in quality and schedule by introducing its technology of controlling work schedule and quality of work.

3-1-2 Implementation Conditions

(1) Local building situation and characteristics of the region

1) Building industries

Ulundi Region where the project is planned is socially and economically one of the under-developed regions in KwaZulu-Natal Province. Most of the roads in the area, except the national and provincial roads, are unpaved and infrastructure such as bridges and embankment for flood control are not yet developed.

Except the areas in the proximity of metropolitan areas, social infrastructures are not yet developed and demands for building industry are generally limited to such works as school buildings, clinics, small-scale commercial buildings and residential houses. In the area, therefore, only small scale contractors exist and large-scale works are generally undertaken by those large and medium size contractors who have main offices in Durban or in Richard Bay.

As for the building materials most of the building materials, other than bricks, concrete blocks and some roofing materials, are generally transported from Richard Bay or Durban area.

2) Labour

There is a surplus of unskilled labour in the project site areas but skilled labour can only be found in the township.

The project shall be executed in a specified time limit at a number of sites by preserving a certain technical level that meets the standards specified in the Contract. Therefore, the utilizing of local sub- contractors in securing, instructing and management of skilled labour is very important as well as transferring of Japanese construction management technology.

3) Construction Materials

In consideration of easy maintenance after the completion of the work and of lowering of the construction costs, most of the construction materials shall be of local products. The major materials required for the project such as cement, steel bars, blocks, bricks, wood, roofing materials, etc. shall be of the products in the Eastern Cape. However, a part of the object area geographically belongs in the economic area of the Kwazulu Natal province, thus Port Shepstone and Darban may be the procurement tip of the construction materials.

4) Transportation

The 27 sites are dispersed within the area about 80 km of Jozini as the center, where construction base is assumed to be located, with a distance of approximately 200km from Richard Bay on a paved road. Most of the access roads are not paved, but maintained well

(the access road to Mziki School in Ingwavuma is partly underdeveloped), and there exist no difficulties of transportation.

5) The rainy season

During the rainy season (usually November to February), careful attention is required when transporting construction materials and machine parts on unpaved roads. In accordance with the assumed work schedule, foundation works are to be completed before the rainy season, but 50% of structural works remains until the end of October, and may be affected by rain. At the works during the rainy season, cautions must be taken for safety and storing of materials, and it is important transporting of materials be finished before the rainy season.

(2) Consideration on execution

The following shall be taken into consideration

- 1) Execution plan shall be so prepared that works be executed efficiently by maintaining quality of works at a satisfactory level and without delay.
- 2) The condition of access road per each site shall be thoroughly studied and a precise transportation plan shall be prepared to cope with the bad condition by the main contractor.
- 3) As to the construction work at the sites where existing facilities are to be under use during the execution, adequate measures for securing safety of the pupils shall be incorporated in the execution plan, and the schedule of work may be adjusted in consultation with the School Governing Bodies.
- 4) In the case of utilizing the labour force available in the communities, technical training shall be carried out by demonstrating building techniques to help the labourers understand techniques and work procedures, of the work involved there-in, and to facilitate the transferring of Japanese building technology.
- 5) Sufficient survey of the quality and supply ability on the occasion of the use of local materials is needed. Intending stable supply, making a supply route plural is desirable.

3-1-3 Scope of Works

The items of the work to be undertaken by each of the two countries are as follows.

(1) The works undertaken by the Government of Japan

- 1) Construction of facilities
 - Classroom buildings (classrooms, office · stores)
 - Toilets
 - Water tanks
- 2) Procurement of Furniture
 - Desks and chairs for pupils and teachers
 - Display board

(2) The works undertaken by the South African Side

- 1) Demarcation and survey of the sites. (The drawings shall be provided to the Japanese Consultant before the beginning of Detail Design)
- 2) Preparation of site grounds inclusive of leveling of ground and removing of any obstacles (including the existing buildings if necessary) from the sites.
- 3) Improving and maintaining of the access roads.
- 4) All external works such as fencing, landscaping, etc., other than those related to the construction of facilities by the Japanese side.

3-1-4 Consultant Supervision

(1) Detail Design and Supervision Policies

The consultant shall prepare detail designs and tender documents based on the contents of the Basic Design Study and in consultation with KZNDEC

During the period of the construction and procurement of furniture the consultant shall dispatch a resident supervisor to the sites for supervising the work, reporting to and coordinating with KZNDEC and other concerned organs. The duties carried out by the consultant are as follows.

- Detail Design
 - Prepare detail drawings, specification and tender documents
- 1) Facilitating of Tendering and Construction Contract
 - Determine contract policy, prepare draft of Contract, examine breakdown of construction cost, assist with selection of contractor, etc.
 - (Inclusive of tender announcement, examination of P.Q.)

2) Examination and approval of shop drawings.

Examine and approve the shop drawings, sample of materials and finishing, and equipment submitted by the contractor.

3) Instruction for works

Give necessary instruction to the contractor by examining execution plan, execution schedules submitted by the Contractor.

4) Report on construction progress

Submit progress report to the Employer and the concerned organs.

5) Approval of Payments

Examine and approve the bills submitted by the contractor during and after the construction, and assist the procedures.

6) Inspection

Carry out inspection at the time of surveying amount of work completed and quality of work from the beginning of the work through the completion.

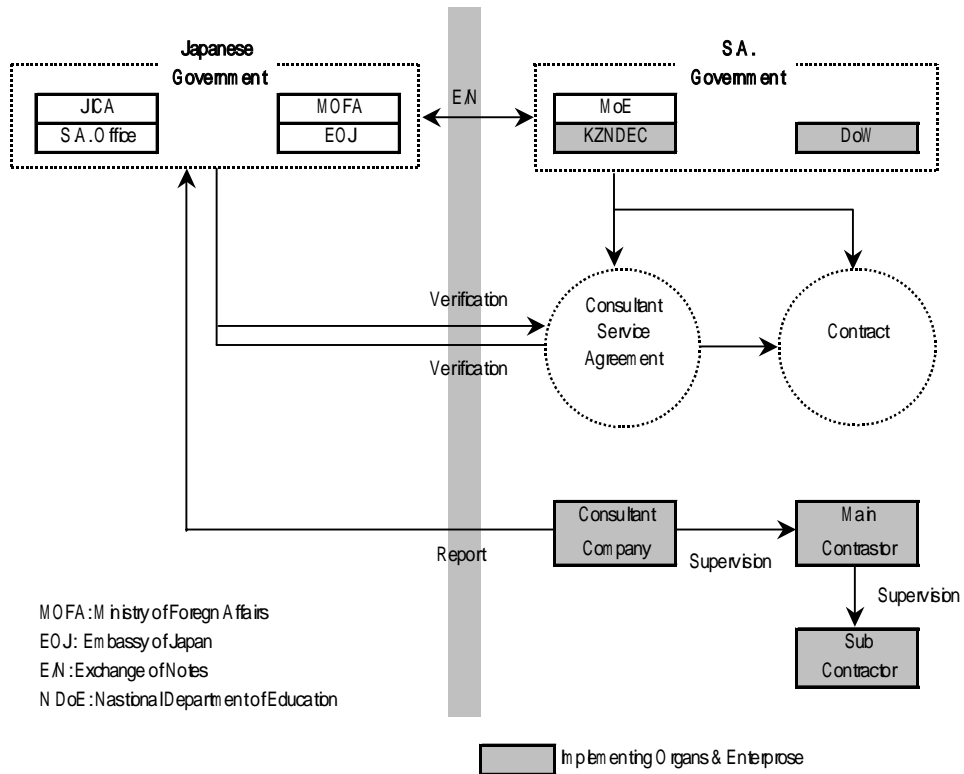
(2) Organization for Supervision

In order to carry out efficient supervision in a widely spread construction area- with regard to quality, schedule and safety of the works - and to enable sufficient communication with the concerned district and provincial officials, a supervising team, consisting of one Japanese and three local staff, shall be stationed in the site area through the work period. And when necessary the following specialist shall be dispatched.

Architect (Project Manager): Dispatched at the time of the commencement and completion of the construction

Structural engineer: At the time of foundation work.

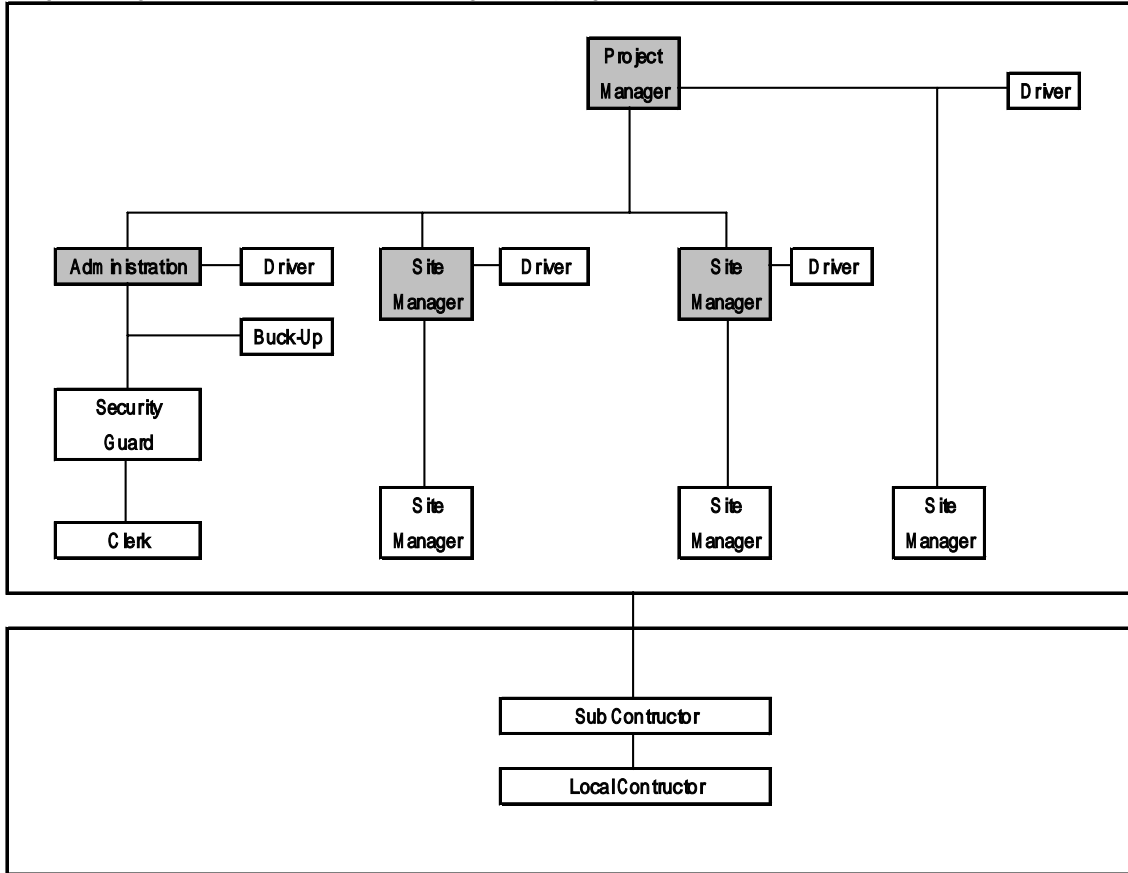
Dwg.3-1: Organs & System in Implementation of the Project



(3) Organization for Construction Management

The construction shall be executed by utilizing plural number of local contractors as sub contractors, and the sub contractors employ local small scale contractors of which 2 or 3 contractors be placed in one major construction area (thus, one foreman look after 2 or 3 sites) The main contractor, therefore, organize a suitable management system to maintain equal construction technique and quality among plural number of sub contractors. Below is given the organization diagram for construction management system proposed for the project.

Dwg.3-2:0 rganization forConstruction Management (In age)



 Japanese Staff

 Local staff

3-1-5 Procurement Plan

In principle all the construction materials shall be procured locally. Upon designating specific suppliers, the supply capacity of the suppliers, durability and quality of the materials shall be thoroughly examined. The procurement plan for major materials is as follows.

(1) Building work

Cement: Product of S.A.

Steel bar: Product of S.A.

Block: Local product

Aggregate: Local product

Concrete: Made at work sites by using mixer

Form work: Wood form work, but reduced as much as possible.

(2) Finishing and window - door work

Flooring material: Product of S.A.

Plaster: Made at work sites by mixing cement and sand.

Paint: Product of S.A.

Wooden door: Local product

Glass: Product of S.A.

Roofing Material: Product of S.A. with anti-salt coating

Furniture: Product of S.A.

3-1-6 Implementing Schedule

After the signing of the Exchange of Notes, consulting agreement shall be signed between KZNDEC and the consultant, and the construction will be implemented following the three steps - Detail Design, Tender, and Construction Contract -

(1) Detail Design

The consultant shall prepare detail design drawings and tender documents on the basis of the contents of the Basic Design Study. The detail design comprises detail drawings, specifications and structural calculation sheets. The consultant shall, in the course of the detail designing, consult with KZNDEC for their approval and after the approval, proceed with the tender.

(2) Tender

The consultant shall on behalf of the KZNDEC notify on a newspaper an announcement for the invitation to Re-qualification. The tender shall be carried out in Japan in the presence of the personal concerned. The tenderer who submit the lowest price shall be the successful tenderer, provided that the content of his tender be proper. The Construction contract will be signed between KZNDEC and the Contractor in the Province of KwaZulu-Natal. The contract shall be verified by the Government of Japan to become effective. The time period required from the consultant agreement to the construction contract will take roughly 5 months.

(3) Construction

After the verification of the construction contract the construction shall be commenced. The construction shall be commenced in the order of scale of building, so as starting with large to

small, at an interval of two weeks time; then, by adjusting the construction schedules for each site it is, therefore, feasible to complete the entire construction work in the time span of 12 months.

Table 3-1: Project Implementing Schedule

	1	2	3	4	5	6	7	8	9	10	11	12
Detail Design	Consultant Agreement, Site Survey											
	Detail Design											
	Tender Works											
	VISA											
Construction & Procurement	Preparations											
	Arth, Foundation											
	Frame Works											
	Interior											
	Exterior Works											
	Furniture Procurement, Furnish											
	Inspection, Handover											

3-1-7 Obligations of Recipient Country

- (1) To secure land
- (2) To clear, level and reclaim the site when needed
- (3) To construct gates and fence in and around the site
- (4) To construct or maintain roads outside the site
- (5) To provide infrastructure such as electricity, water, telephone, etc. when needed
- (6) To bear the following commission to a bank of Japan for the banking services based upon the B/A
 - 1) Advising commission of A/P
 - 2) Payment commission

- (7) To ensure prompt unloading, tax exemption, customs clearance at the port of disembarkation and prompt internal transportation therein of the materials and equipment for the Project purchased under the Grant Aid.)
- (8) To exempt Japanese juridical and physical nationals engaged in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in South Africa with respect to the supply of the products and services under the verified contracts.
- (9) *To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the South Africa and stay therein for the performance of their work in accordance with the relevant laws and regulations of the Republic of South Africa.
- (10)*To provide necessary permissions, Licenses and other authorizations for implementing the Project, if necessary.
- (11)To maintain and use properly and effectively the facilities constructed under the Project in responsibility of KZNDEC
- (12)To allocate appropriate budget and teaching and administrative staff members for proper and effective operation and maintenance of buildings provided under the Grant Aid.
- (13)To bear all the expenses, other than those to be borne by the Japan's Grant Aid within the scope of the Project.

3-2 Project Cost Estimation

3-2-1 Project Cost Estimation

1. Condition for estimation

- 1) Date: April 2001
- 2) Exchange rate: R1=¥16.34
- 3) Work period: one year from March, 2002(probable date)
- 4) Tax to be levied on the items procured in Japan.

2. Project cost estimation

(1) The cost born by South Africa side

- Repairing of access roads:

The access road to Mziki School in Ingwavuma District, approximately 0.8km, shall be repaired. The cost estimated is R1,300.

-Demolish- Removal of existing facilities and fence, Temporally Classrooms

The sites have adequate area and no removal of the existing buildings involved. And, therefore, neither demolishing of the existing school buildings nor preparation of temporary classrooms is required.

3-2-2 Operation and Maintenance Costs

(1) Operation and Maintenance plan

The operation and maintenance of the facilities and furniture provided in this project shall be carried out by the School Governing Body consisting of teachers and representatives of communities; that is teachers (under direction of principal) are responsible for the maintenance of the furniture and parents with the communities carry out daily cleaning and maintenance works of the facilities. Septic tanks must be cleaned twice a year to maintain the function for proper operation. As to the other facilities as long as properly used, no maintenance cost will be required. Wooden doors and hardware may need repair or replacement in a long term; these can be coped with using locally available materials and skills of the people in the communities.

(2) Operation and Maintenance costs

1) Personnel expense (teachers)

Currently (as of March 2001) there are 548 teachers at the 27 schools. The number of classrooms when the project is completed will be 508; therefore, allocation of additional teachers will not be necessary.

2) Operation and maintenance expense for facilities.

As there are no electricity or water supply equipment, no operation expense as required in general cases, will be involved. The buildings are designed so as to reduce maintenance cost as much as possible, in principle, free of maintains. However, as to the doors, windows, and some finishing materials, repair or replacement may be required in a long run. Daily maintenances are managed by School Fund and Building Fund, which are organized by each target schools, and are collected from pupils.

Table 3-2: Operation and Maintenance cost per year

Item	Rand	Condition
Painting	R 1,800	Doors & Windows: once 5 years, R 370/BCRs Ceiling: once 5 year, R 4650/BCRs Exterior Wall: once 10 year, R 8040/BCRs R 1800/each school a year
Repair of Roofing		Negligible (last 25 years or more)
Misc. Repair	R 100	Window glass, etc.: 12 places/year (R 84/PL) R 100 average/school/year
Repair of Water Supply & Drain		Gal. Steel tanks: (last more than 15 years) Pipes (last 25 years or more)
Total	R 1,900	
Cleanings of Septic Tank	R 520	Cleaning: once/year (by community) Sludge: once 2 years (ave. volume 16cu M) Cost: R 0.8/km + R 120/cu M Distance from base point: ave. 200km R 520/each school a year
Total	R 2,420	

CHAPTER 4

PROJECT EVALUATION AND RECOMMENDATION

CHAPTER 4 PROJECT EVALUATION AND RECOMMENDATION

4-1 Project Effect

(1) Appropriateness of Project

1) Appropriateness of Project Site: Provincial level

Large inequalities are observed in the social and economical development among the nine provinces of South Africa. The provinces with higher proportions of black residents face severe disadvantages both economically and socially. KwaZulu-Natal Province includes the former Homeland area, and the infrastructure of educational facilities in the field of basic education is poor. KwaZulu-Natal is badly in need of educational development along with Northern Province, Mpumalanga Province, and Eastern Cape Province. For this reason, it is deemed suitable that the province be covered under this project.

Table 4-1: Statistics Brief per Province

Province	Assumed Population 1999 (,000) *1	Ratio of African 1996 (%) *2	GDP/Person 1994 (Rand) *3	HDI *4	Shortage of Classrooms 1997 *5
KwaZulu-Natal	8,924	81.7	4,124	0.602	14,020
Eastern Cape	6,659	86	2,626	0.596	15,076
Free State	2,715	84.4	5,404	0.65	2,644
Gauteng	7,807	70	11,647	0.717	2,951
Mpumalanga	3,003	89.2	7,641	0.628	4,626
Northern Cape	875	33.2	6,808	0.63	493
Northern	5,337	96.7	1,712	0.531	12,559
North West	3,562	91.2	3,911	-	3,096
Western Cape	4,171	20	9,104	0.702	1,986
SA	43,054	76.7	5,745	0.628	57,451

*1: "Stats in brief 2000" Statistics South Africa

*2: "Stats in brief 2000" Statistics South Africa

*3: "KwaZulu-Natal Development Profile 1998"
Development Bank of Southern Africa
GGP = Gross Geographic Product

*4: "Measuring Poverty in South Africa" Statistics South Africa 2000

*5: "School Register of Needs Survey" Education Foundation 1997

In Eastern Cape Province a grant aid cooperation was provided by the Japanese Government for construction of primary and junior secondary schools (1st project) which was completed in 2000, and further to the 1st project, the second project is currently in progress.

2) Appropriateness of Project Site: District level

The districts covered under this project, Ubombo and Ingwavuma, are located in Ulundi Region. Remote from the economic center, the Ulundi Region is the poorest region in KwaZulu, and development of school facilities in the region, therefore, is lagging behind the other seven regions in the province.

3) Appropriateness of Project Scale and Specifications

As a result of the site survey, in which the number of pupils enrolled, the conditions of existing classrooms and other school facilities had been examined, it was found that 27 of the 31 target schools require new or extension of classrooms, as well as principal's rooms, teachers' rooms, warehouses, and toilet facilities, installation of rainwater tanks.

The number of classrooms requiring construction in this project was calculated by using the average number of pupils' attendance at each school over the past four years and the number of classrooms continually usable in each school. Then on the basis of the calculated number of required classrooms, the sizes of the teachers' rooms, the numbers of new toilets, and the numbers of rainwater tanks were determined. And as for principal's room and warehouse, the needs were determined on the basis whether they existed or not at the time of the site study.

This scale of the project is considered to be necessary and essential at a minimum from a viewpoint of establishing smooth school administration and improving educational environment for the pupils attending the schools.

(2) Project Effect

The following effects can be expected from implementation of this project.

1) Improvement of learning environment

As a result of site survey at the 31 subject schools, it was observed that there are classrooms damaged by tornadoes and floods, structurally dangerous, and some classrooms being used as principal's rooms, teachers' rooms or stores. And also at some of the schools, because of a shortage of classrooms, lessons are being given outdoors.

By providing 215 new classrooms under this project, the mean number of pupils per classroom will become 44.1 pupils (at completion in March 2003), marking a substantial improvement over the mean of 77.1 pupils at the time of the survey (March 2001). Also, the classroom area per pupil will increase by 1.73 times, from 0.65 m² to 1.13 m², thereby relieving the current overcrowded classroom situation and, in consequence, improving the learning environment.

2) Improvement of Sanitary Condition

The sanitary conditions at the target schools are generally very poor. At many schools

there are no toilets, or those existing are found structurally poor, unsanitary, and insufficient in the number. Due to the unavailability of tap water in the nearby areas, teachers and students at many schools are using rainwater reserved in tanks or obtaining water from wells or public water sources, usually located distant away.

In view of these circumstances, installation of rainwater tanks to new classroom buildings is included in the scope of the project so that water be used for cleaning, and other purposes. In addition, rainwater tanks are to be provided for the toilets so that pupils can wash their hands after using the restrooms.

Moreover, these provisions of rainwater tanks added to the school facilities, the sanitary condition for the pupils would be enhanced to a great extent, and it is expected to improve the awareness and concepts of sanitation among teachers and students alike.

3) Improvement of School Management

At some of the schools, due to the lack of such facilities as principal's rooms, teachers' rooms and stores, some classrooms are seen being used for other purposes (principal's room, teachers' room, warehouse). In view of this circumstance, it was determined that principal's rooms, teachers' rooms and stores are planned to be constructed where these facilities do not exist so that enabling the principals and teachers concentrate on school administration, and/or to prepare their subjects in advance, or to use the room for meetings, etc. Newly constructed stores would be used to store foodstuff for feeding service programs, currently implemented by the Ministry of Health, besides storing textbooks and education materials.

With these considerations taken, the implementation of the project is expected to contribute to strengthening school management, as well as enhancing quality of education as a whole.

4) Benefit Effect of the Communities -

Direct effect: The total population in the two districts, Ubombo and Ingwavuma, is 304,533 (according to the census conducted in 1996). A total of 22,196 pupils are expected to directly benefit from the project (as of 2001), and also 584 principals and teachers (as of 2001) benefit from the provision of new principal's rooms and teachers' rooms: Therefore, 22,744 persons in total will be able to benefit directly from the project.

Indirect effect (increase of multi-purpose use):

Many of the communities around the schools are using the school facilities for their cultural and sports activities and/ or for adult literacy education currently in promotion by the Government of South Africa. For this reason, the utilization of school facilities by the communities is expected to further increase when the numbers of classrooms and other facilities increase.

4-2 Recommendation

The project is not only expected to give a large effect in the development of basic education in Ingwavuma and Ubombo District of KwaZulu-Natal Province, but at the same time expected to contribute broadly to the extensive satisfaction of BHN among the residents. With these views, it is judged that the implementation of this project will have a significant and meaningful impact. However, in order to lead the project to a success, and the facilities be used more effectively, it is essential that the following be ensured by the South African side.

- 1) The access to school sites should be secured by the Government of KwaZulu-Natal Province prior to implementation of the work for this project.
- 2) Continual collection of reserve funds (school funds), required for proper operation and maintenance of schools, is to be secured.

APPENDICES

INDEX

1. Member List of The Survey Team	P-1
2. Survey Schedule	P-3
3. List of Party Concerned in the Recipient County	P-6
4. List of Reference Materials	P-7
5. Minutes of Discussion	P-9

APPENDIX

1. Member List of The Survey Team

(1) Basic Design Study

1. Leader/ Mr. Norio SHIMOMURA
Deputy Managing Director, Grant Aid Management Department,
Japan International Corporation Agency (JICA)
2. Project Coordinator/ Mr. Yasuhiko WADA
Planning Division,
Grant Aid Management Department, JICA
3. Project Coordinator/ Mr. Hirotaka NAKAMURA
First Project Management Division,
Grant Aid Management Department, JICA
4. Chief Consultant/ Project Planner and Architectural Designer/
Mr. Ichiro NOMURA
Fukunaga Architects-Engineers
5. Educations and Social Environment Planner/ Mr. Kunio NISHIMURA
Fukunaga Architects-Engineers
6. Architecture and Facility Planner 1/ Mr. Shigeru OGURA
Fukunaga Architects-Engineers
7. Architecture and Facility Planner 2/ Mr. Yoshiaki ICHIBAGASE
Mohri, Architect & Associates, Inc.
8. Execution, Procurement and Cost Planner /
Mr. Takashi KUNIKATA
Fukunaga Architects-Engineers

(2) Basic Design Study (Consultation of Draft Report)

1. Leader/ Mr. Yoshiyuki TAKAHASHI
Resident Representative in South Africa, JICA
2. Project Coordinator/ Mr. Hirotaka NAKAMURA
First Project Management Division,
Grant Aid Management Department, JICA
3. Chief Consultant/ Project Planner and Architectural Designer/
Mr. Ichiro NOMURA
Fukunaga Architects-Engineers

4. Educations and Social Environment Planner/ Mr. Kunio NISHIMURA
Fukunaga Architects-Engineers

2. Survey Schedule

(1) Basic Design Study

Date	Month/ Date	Travel	Air			Meeting	Schedule
			Departure	Arrival	FlightNo.		
1	2/12	Mon	NT > SP	12:00	18:15	SQ 997	
2	2/13	Tue	SP > JB	12:00	5:35	SQ 406	8:45 JICA, 9:30 Embassy
			JB > Rby	16:30	18:00	SA 1607	11:30 DOESA
3	2/14	Wed	Rby > Uld				10:00 KZ DEC
4	2/15	Thu	Uld > M kz				10:00 Reg DEC
5	2/16	Fri					17:00 Disrt. M gr., Ingw at Hotel
6	2/17	Sat					7:15 Survey #7 #Injula #23
7	2/18	Sun				Internal Meeting	
8	2/19	Mon					9:00 Principal Mtg. (Ubo)
9	2/20	Tue	M kz > Uld				10:00 DEC Mr Koetzer
							Principal Mtg. (Ing) Survey #18 #23
10	2/21	Wed					9:00 Reg DEC, 14:00 DdW
							Survey #31 #4
11	2/22	Thu					9:00 DEC Reg DEC
							Survey #28 #30
12	2/23	Fri	Uld > M kz				
							Survey #29 #1
13	2/24	Sat					Survey #3 #25 #27
							Survey #3 #25 #28
14	2/25	Sun				Internal Meeting	
15	2/26	Mon	M kz > Uld				14:00 DdW Reg DEC
16	2/27	Tue	Uld > Dbn				Dbn.; Survey on Procurement Method
17	2/28	Wed	Dbn > JB	15:00	16:10	SA 562	
							Dbn Rby; Survey on Procurement Method
18	3/1	Thu					8:30 JICA Embassy DOESA
							Survey #6 #15 #2
19	3/2	Fri	JB > Rby > M kz	13:50	15:20	SA 1605	
							Survey #18 #10
20	3/3	Sat					Survey #14 #10
							Survey #5 #11
21	3/4	Sun				Internal Meeting	
22	3/5	Mon					Survey #20 #19 #16
							Survey #12 #8
23	3/6	Tue					Survey #24 #26
							Survey #14 #21
24	3/7	Wed					C Mtg. Pongola DEC School
							Survey #18
25	3/8	Thu					Oelsen Arch., Survey on Procurement Method
							Work
26	3/9	Fri	M kz > Rby > M kz				Internal Meeting
							10:00 Uban bod Dof.
							Circuit Managers Mtg.
27	3/10	Sat				Internal Meeting	Work
28	3/11	Sun				Internal Meeting	Work
29	3/12	Mon	M kz > Rby > M kz				9:30 DEC DdW Reg DEC
30	3/13	Tue	M kz > Rby > M kz				9:30 DEC DdW Reg DEC
							Internal Meeting
							Work

Date	Month/ Date		Travel	Air			Meeting	Schedule
				Departure	Arrival	FlightNo.		
31	3/14	Wed	Mkz>Rby> JB	11:15				Survey on Procurement Method
			Mkz>Rby> JB	15:45	17:15	SA1606		
32	3/15	Thu					Internal Meeting	
							9:00; Discussion on Procurement Method	Survey on Procurement Method
33	3/16	Fri					Survey on Procurement Method	
			JB>SP	14:15	6:20	SQ405		
34	3/17	Sat	SP>NRT	9:50	17:05	SQ012	Survey on Procurement Method	
35	3/18	Sun					Internal Meeting	
36	3/19	Mon	JB>KL	14:10	6:20	MH202	JICA	
37	3/20	Tue	KL>NRT	11:30	19:00	MH070		

NRT: Narita
SP: Singapore
JB: Johannesburg
Rby: Richards Bay
Uld: Ulu
Mkz: Mkhuzo
Dbn: Durban
KL: Kuala Lumpur

M.L. Marina Lodge Protea Hotel
H.I. Holiday Inn
GM. Ghost Mountain Inn
Bh. Banghoek Inn
M.P. Marine Parade
H.F. Hatfield
R.B. Rosebank Hotel

#No. Community Meeting.

(2) Basic Design Study (Consulting of Draft Report)

N o.	M onth D ay	D ate	T ravel	Schedu le
1	21.M ay	M on	Tokyo>>S ingapore (SQ 997 12:00 > 15:00) S ingapore	
2	22.M ay	Tue	S ingapore>>Johannesburg (SQ 405 1:20>5:45) P retoria Johannesburg>>R ichardsB ay (SA 1607 16:30>18:00)	JICA O ffice E m bassy C ourtesy C all on M oE
3	23.M ay	W ed	U lund i R ichardsB ay>>Johannesburg (SA 1608 18:40>20:10)	C ourtesy C all on KZN DEC
4	24.M ay	Thu	U lund i	D iscussion and P resentation of D raft R eport
5	25.M ay	F ri	D urban	D iscussion S urvey on EU Schools
6	26.M ay	Sat	D urban	In terna l M eeting
7	27.M ay	Sun	M ukuze	S ite S urvey
8	28.M ay	M on	U lund i	M eeting
9	29.M ay	Tue	U lund i	S ign ing M inutes (P rovince)
10	30.M ay	W ed	P retoria	S ign ing M inutes (N ational) E m bassy
11	31.M ay	Thu	Johannesburg>>S ingapore (SQ 405 14:15>6:15)	
12	1 Jun	F ri	S ingapore>>T okyo (SQ 012 9:50>17:35)	

3. List of Party Concerned in the Recipient County

<Department of Education>

Mr Charles Sheppard Director: Physical Planning, DEC

<Department of Environmental Affairs and Tourism>

Mr G.C. Schulze Chief Director: Weather Bureau, DEAT

<KwaZulu-Natal Province DEC>

Mr N.S. Shamaze Deputy Director: General Provision Support and Development, DEC

Mr P.T. Kunene Director: Budget, DEC

Mr Johan Coetzer Director: Information and Physical Planning Services, DEC

Mr P. Buthelegi Information and Physical Planning Services, DEC

Mr Patrick Pillay Information and Physical Planning Services, DEC

Ms Zamamzimela Information and Physical Planning Services, DEC

<KwaZulu-Natal Province DoW>

Mr R.M. Wildenboer Director of Architecture, DOW

Mr R. Patrick Culligan Deputy Chief Architect: Urban Region, DOW

<Ulundi Regional Office>

Mr M. Mthethwa Regional Chief Director

Dr B.S. Khumalo Director: Education Support Services

Mr E.A. Zulu Director: Administration

Mr A.M. Mando Director: Management Services,

Mr Bhekiv Mlambo Chief Education Specialist: Information and Physical Resource Planning Services

Mr M. Bongani Mnguni Deputy Chief Education Specialist: Information and Physical Resource Planning Services

Ms Gerty Winter Deputy Chief Education Specialist: Information and Physical Resource Planning Services

Ms B.T.N. Xaba First Education Specialist: Information and Physical Resource Planning Services

Mr S.Gwala First Education Specialist: Information and Physical Resource Planning Services

<Ulundi Regional Office DoH>

Mr M. B. Mwgunt Department of Health, Regional Office

Ms C.D. Msoela Deputy Director: Department of Health, Regional Office

<Ubombo District Office>

Mr S.J. Nsele District Manager: Ubombo District

Mr L.Z. Dlamini Circuit Manager: Ubombo District

Mr A. Mold M. Fakude Circuit Manager: Ubombo District

Mr N. Daba Circuit Manager: Ubombo District

<Ingwavuma District Office>

Mr H. Latshwayo District Manager: Ingwavuma District

Mr V.S. Siyaya Circuit Manager: Ingwavuma District

Mr V.R. Manzini Circuit Manager: Ingwavuma District

Mr M. E. Vilane Circuit Manager: Ingwavuma District

Mr N. Tuli Circuit Manager: Ingwavuma District

4. List of Reference Materials

No.	Name of Materials	Original or Copy	Collected Data	Issuance
1	Demographic Data	Copy		KZN DEC
2	Physical resources planning	Copy		KZN DEC
3	Conditional Grant 3 (2001/2002)	Copy		KZN DEC
4	Drawing of School TYPE A	Copy		KZN DEC
5	BUILDING PROJECT-AN EXAMPLE OF TYPICAL CASHFLOW	Copy		KZN DEC
6	Number of Pupils, and Schools	Copy		KZN DEC
7	TEXTBOOK CATALOGUE	Copy		KZN DEC
8	Teacher Training	Copy		KZN DEC
9	Main occupation of parents	Copy		KZN DEC
10	Average Household Annual Income	Copy		KZN DEC
11	Population and School Going Age Population	Copy		KZN DEC
12	KZN DEC Diagram	Copy		KZN DEC
13	Number of staff	Copy		KZN DEC
14	PROVINCIAL CASH FLOW June 2000	Copy		KZN DEC
15	DETAILS OF EXPENDITURE -Maintenance	Copy		KZN DEC
16	Security Situation	Copy		KZN DEC
17	PHYSICAL RESOURCES PLANNING	Copy		KZN DEC
18	SUMMARY OF PROGRESS REPORT	Copy		KZN DEC
19	New Schools	Copy		KZN DEC
20	BUILDING PROGRAMME 1999/2000	Copy		KZN DEC
21	MEET	Copy		KZN DEC
22	Site Plan	Copy		KZN DEC
23	1999/2000 Building Programme	Copy		Ulund i Region
24	An Overview of Publicly Funded Schools in KZN	Original		Ulund i Region
25	QUOTATION FOR THE SUPPLY OF SCHOOL AND OFFICE FURNITURE NKANDLA DISTRICT	Copy		Ulund i Region
26	QUOTATION FOR THE SUPPLY OF SCHOOL AND OFFICE FURNITURE UBOMBONDISTRICT	Copy		Ulund i Region
27	ZNT1267EC SUPPLY AND DELIVERY OF SCHOOLS AND OFFICE FURNITURE	Copy		Ulund i Region
28	SCHOOLS, TECHNICALS AND UNIVERSITIES	Copy		DOW
29	PUBLIC HOLIDAYS RELIGIOUS AND FESTIVAL DAYS	Copy		DOW
30	SUMMARY OF PROGRESS REPORT 1-APRIL-2000 TO 26-JANUARY-2001	Copy		DOW
31	EXPENDITURE -99.00-CONDITIONAL GRANT (ULUNDI)	Copy		DOW
32	REPAIR AND RENOVATION PRIORITY LIST -CONDITIONAL GRANT 2000/2001 REGION ULUNDI	Copy		DOW
33	NOTES TO TENDERERS UPGRADE WARDS NKANDLA HOSPITAL	Copy		DOW
34	KZ-N	Copy		DOW
35	STANDARD TYPE CLASSROOMS COMPARATIVE COST AND BUILDING CONSTRUCTION METHODS KZN DOW -KZN SCHOOL TRUST	Copy		DOW
36	FEBRUARY 2001 REVISION OF THE JBCC HAYLETT FORM URA (WORK GROUP 180) AND BENCHMARK BUILDING COST INDEX 2001 TO 2005	Copy		DOW
37	BQ UPGRADE WARDS AT NKANDLA HOSPITAL	Copy		DOW
38	PROPOSED NORMS, STANDARDS AND DESIGNS OF THE KZN SCHOOL MODELS	Copy		DOW
39	AMBLETON PRIMARY SCHOOL Drawings	Copy		DOW
40	NEW PRIMARY SCHOOL AT BROOKDALE PHOENIX Drawings	Copy		DOW
41	PRIMARY SCHOOLS (TYPE A) Electrical Drawings	Copy		Gauteng
42	LIST OF MASTER BUILDERS & ALLIED INDUSTRIES ASSOCIATION IN NORTHERN KWAZULU-NATAL	Copy		DOW
43	REGISTER OF ARCHITECTS, QS, ENGINEERS INCLUDED ON THE KZNPA WORKS ROSTER	Copy		DOW
44	SS INDUSTRIAL TYPE -Window Types	Copy		
45	Estimated Tender Rates, Standard Schools (KZN Standard Spec.)	Copy		Cilliers & Liebenberg
46	FEE FOR PROFESSIONAL SERVICES	Copy		DOW
47	ADDITIONAL CLASSROOMS AND TOILETS AT VARIOUS SCHOOLS	Copy		DOW
48	TARIFF OF PROFESSIONAL FEES (Government Gazette 1993)	Copy		DOW

No.	Name of Materials	Original or Copy	Collected Data	Issuance
49	RIVISED Capital Works Project List (SUB 250) 2001/2002-U lund i Region	Copy		U lund i Region
50	Sinothando PS-Pongola New 3C classroom Block MINUTES OF SITE HANDOVER MEETING	Copy		U lund i Region
51	TYPE PRE-CAST CONC.PIT LATRINE-Draw ings	Copy		Health
52	MULTICOMPARTMENT LATRINE for SCHOOLS-Draw ings	Copy		Health
53	REPORT ON THE DAMAGE CAUSED BY THE STORM AT AMANDLA H IGH SCHOOL ON 01 JANUARY 2001	Copy		U lund i Region
54	Furniture Catalog	Original		GNH
55	Ingu avum a,U bom bo Enrolm ent(1999,2000,2001)	Copy		U lund i Region
60	EDUCATION STATISTICS IN SOUTH AFRICA AT A GRANCE 1999	Copy		U lund i Region
61	Enrolm ent 2000 (Ingu avum a,U bom bo)	Copy		U lund i Region
62	SNAP SURVEY 2001,SHEET	Copy		U lund i Region
63	ANNUAL SURVEY FOR SCHOOLS (14 M arch)	Copy		U lund i Region
64	Snap 99 (province total)	Copy		KZN DEC
65	CODE LIST OF SUBJECTS (2001)	Copy		U lund i Region
66	CODE & School Name (2001)	Copy		U lund i Region
67	Enrolm ent of Snap Survey 99 (Ingu avum a,U bom bo)	Copy		U lund i Region
68	Enrolm ent of Snap Survey 99 (Ingu avum a,U bom bo)	Copy		U lund i Region
69	Enrolm ent of Snap Survey 2001 (Ingu avum a,U bom bo)	Copy		U lund i Region
70	Enrolm ent of Snap Survey 2000 (6 districts)	Copy		U lund i Region
71	Annual Report 2000 of KZN province(D raft)	Copy		KZN DEC
72	GNH OFFICE AUTOM ATION	Copy		KZN DEC
73	Daily News,18 M arch 2001	Copy		KZN DEC
74	Enrolm ent of Snap 2000 (Ingu avum a)	Copy		U lund i Region
75	Enrolm ent of Snap 2000 (U bom bo)	Copy		U lund i Region
76	Enrolm ent of Snap 2001 (6 districts)	Copy		U lund i Region
77	NATIONAL HIV SERO-PREVALENCE SURVEY OF WOM AN ATTENDING PUBLIC ANTENATAL CLIN ICS IN SOUTH AFRICA 1999	Copy		DEP.OF HEALTH
78	INTERIM POLICY FOR EARLY CH ILEDHOOD DEVEROPMENT	Original		DoE
79	infant mortality and child health in the Kw azu lu-N ata I Province 1988/1992	Original		H SRC
80	CONFLICT and V IOLENCE in N ata I Kw azu lu	Original		H SRC
81	Clim ate Data	Copy		W EATHER BUREAU

5. Minutes of Discussion

Refer to ...

- Part 1: minutes-01.pdf
- Part 2: minutes-02.pdf
- Part 3: minutes-03.pdf

Attachment

To be continued...

- FINAL_REPORT_02.pdf